CHECKING OUT USED GEAR: Buying used IT hardware can save big bucks. But you'll need to be careful and kick the tires to avoid the lemons. PAGE 28

COMPUTERWORLD®

Corporate IT Done 'Lite'

Cheap, lightweight tools are in. Bloated software suites are out. PAGE 18

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Inside

JUNE 22, 2009
VOL. 43, NO. 22 $5/COPY

News Analysis

A Connecticut college cites price and support in choosing 3Com over Cisco for a network upgrade. PAGE 12

Open-source routers are winning over a few early corporate adopters in the nascent market. PAGE 14

THE GRILL: Bruce Bueno de Mesquita uses his computer model to predict the outcome of political and business conflicts. PAGE 16

Opinions

An entire industry bands together in the name of IT efficiency. PAGE 35

Give your CEO the hard numbers he wants to see on IT performance. PAGE 40

Careers

A free certification program gives military veterans a leg up on IT careers. PAGE 24

Your potential. Our passion.
Microsoft

To get the full MSC story on your phone, snap a picture of this tag. (Requires a free mobile app from *http://gettag.mobi*)

Mediterranean Shipping Company has discovered a new form of energy.

Mediterranean Shipping Company (MSC) is the second-largest container ship line in the world, with a database that tracks more than 210 billion transactions a year. The company recently upgraded its database to Microsoft® SQL Server® 2008, not only to handle this massive load, but also to simplify MSC's database administration and help ensure high availability. Which is like a new form of energy for MSC.
See the whole story at **SQLServerEnergy.com**

Microsoft
SQL Server 2008

Inside

COMPUTERWORLD ■ JUNE 22, 2009

■ NEWS

5 Iranian researchers claim they built a **high-performance computer** using **AMD Opteron** microprocessors. | **Iranians** use **Twitter** to disseminate news during a **government crackdown.**

8 Heartland Payment Systems' CEO gets **kudos** for his response to a **massive data breach** discovered earlier this year. | **IBM** rolls out new **cloud-computing** offerings for large enterprises.

10 A report from the **New Mexico Legislature** raises **doubts** about the future of a state-funded **supercomputer project.**

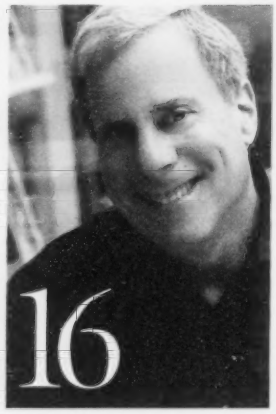
12 University Picks 3Com Switches Over Cisco's. Quinnipiac University opts to use 3Com H3C network switches instead of equipment from market leader Cisco for an overhaul of a network based on Cisco gear.

14 Open-Source Routers Are Becoming an IT Option. Analysts say the technology isn't for everyone, but some IT managers are turning to open-source routers in an effort to gain capabilities while cutting costs.

■ OPINIONS

35 Bart Perkins looks at one industry that has banded together to make IT more efficient.

40 Paul M. Ingevaldson has a plan for getting hard ROI figures for IT into the hands of your CEO.



■ DEPARTMENTS

16 The Grill: New York University professor **Bruce Bueno de Mesquita** uses a computer model to predict the outcomes of national security issues, public policy debates – and international conflicts.

33 QuickStudy: Emulation or Virtualization? Don't be confused! Virtualization and emulation aren't the same thing. We sort out the differences.

34 Security Manager's Journal: We've Been Blind to Attacks on Our Sites. A new firewall uncovers site scraping by competitors. And there's no telling how long it's been going on.

36 Career Watch: A recent survey looks at the job prospects for this year's college graduates.

38 Shark Tank: There are three ways to do IT: the hard way, the easy way and the obvious way.

■ ALSO IN THIS ISSUE

Online Chatter	4
Company Index	38

BRIAN STAUFFER

■ FEATURES

18 Corporate IT Done 'Lite'

Instead of using costly software from big-name vendors, some IT shops are trying cheap, lightweight Web 2.0 and open-source tools that deliver ROI quickly.

24 Enlisting In IT

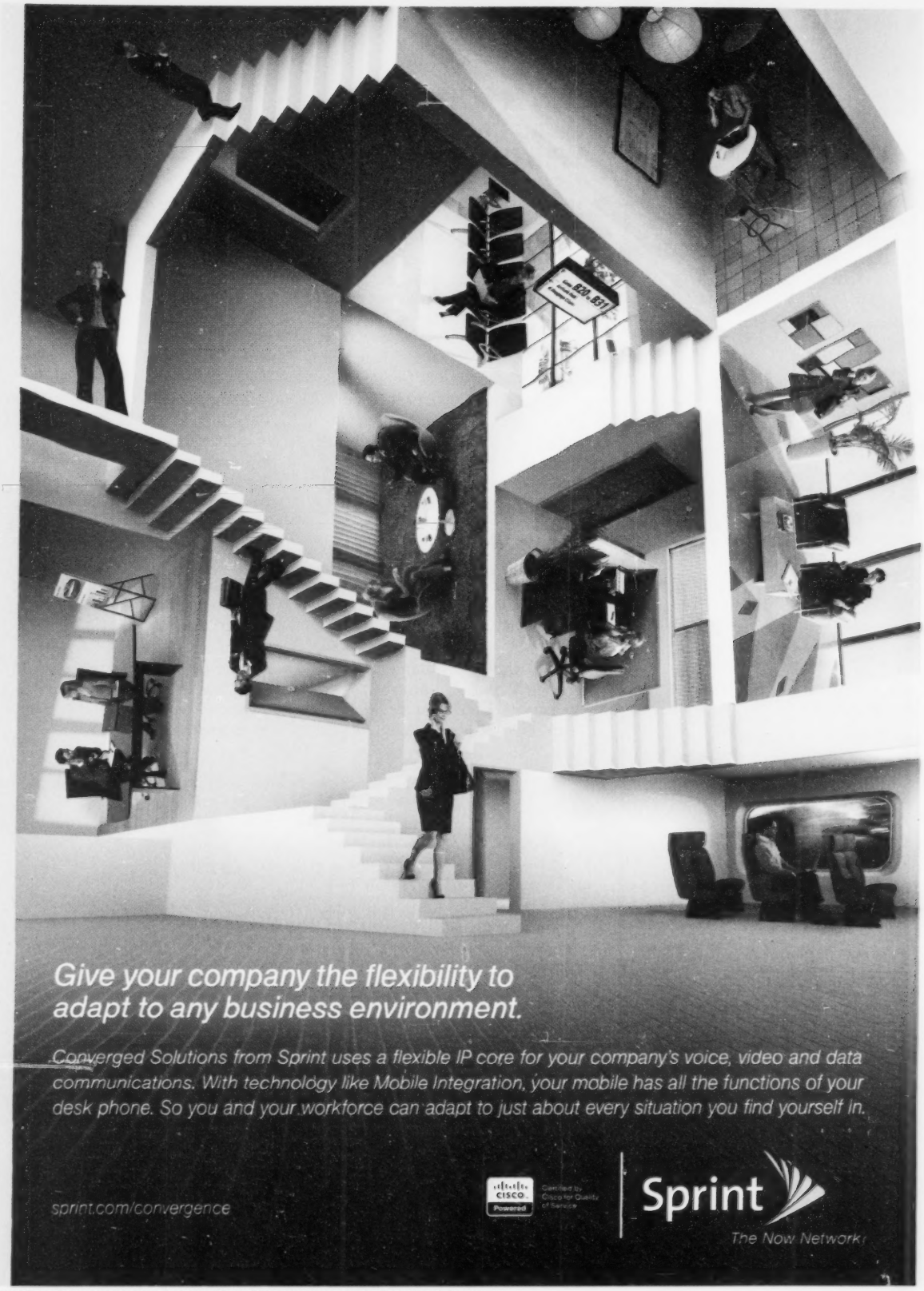
Veterans fight the unemployment odds with the help of free certifications through the CompTIA Educational Foundation.

28 Checking Out Used Gear

Used IT hardware can be good and cheap – if you're careful. Here's how to avoid the lemons.

32 Nonprofits Share Tech Expertise

Nonprofits in the NetHope consortium help one another by sharing their IT experiences and open-source software.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ONLINE CHATTER

RESPONSES TO:

Why Is Silicon Valley Being Compared With Detroit?

June 3, 2009

Silicon Valley is what it is because of its network, and not the kind that involves wires. Top universities produce top talent, who find jobs at start-ups or the R&D units of major corporations based there. At some point, those people come up with an idea to start a business of their own, often with former pals from college or work. The VC money is there, as are the connections required to hook up with the VCs and really sell them on your idea. Could some of that be done in Detroit or Madison? Sure. But Silicon Valley is a complex technology ecosystem, not easily replicated elsewhere. And yeah, the cost of living is outrageous, but fortunately coming back down to earth (at least a little).

Submitted by: *Anonymous*

As one who lives, works and has a start-up in Detroit, I find the comparison relevant, but a bit unfair. True, the auto companies grew complacent over a long period of time, and they must shoulder their share of the blame for what has happened to Detroit, but unlike Silicon Valley, living costs here remained reasonable, even during the boom times. A $200,000 home here sells for $1 million in Silicon Valley. Granted, year-round sunshine and spring-like winters are worth some kind of premium, but not that kind.

The standard of living that an IT salary can support here is vastly better than some of the higher-cost areas. Will that mean IT jobs flocking to Detroit, Pittsburgh or Minneapolis? Probably not, but it is something to contemplate. Standard of living should be a consideration.

Submitted by: *D Gonos*

In the end, it will be Bangalore that is the new tech capital of the world. It is already happening. Ten years from now, it may be the Silicon Valley tech companies that the U.S. government has to bail out.

Submitted by: *Arun*

JOIN THE CHATTER! *You, too, can comment directly on our stories, at* **computerworld.com.**

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Addressing Performance With Scorecards

Performance management blends BI, financial data and other disciplines, then ties it all to business goals.

Hands On: The Palm Pre

It's better than the iPhone in many ways, but it lacks the apps and speed.

Get Everyone on the Same Page

The key to integrating several IT units is to recognize the expertise of each.

Six HD Displays, From Midsize to Massive

Review: Does size matter when you're looking for a great monitor?

The 15-in. MacBook Pro: Faster and Cheaper

Review: In recessionary times, who doesn't want more for less? The new midsize MacBook Pro gets an evolutionary upgrade, plus something revolutionary (for Apple): a price cut.

News Digest

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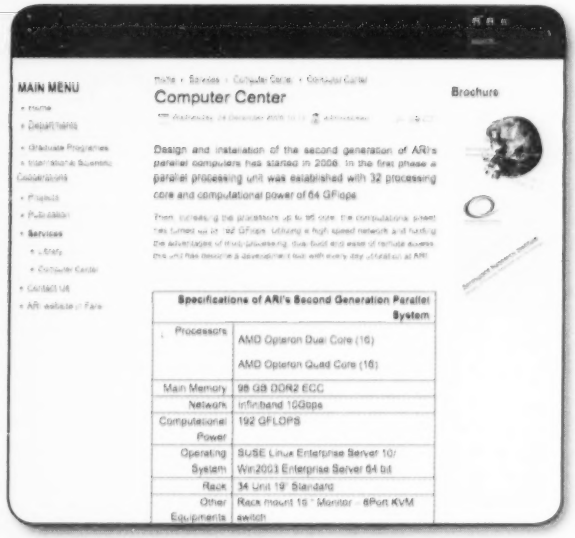
THE WEEK AHEAD

TUESDAY: Oracle is scheduled to release its fourth-quarter and fiscal year 2009 financial results.

WEDNESDAY: Red Hat is slated to hold a live webcast to release its first-quarter fiscal 2010 financial results.

THURSDAY: The Armed Forces Communications and Electronics Association will hold a cybersecurity symposium for federal government and U.S. military officials and contractors in Washington.


MAIN MENU
Computer Center
Brochure
Design and installation of the second generation of ARI's parallel computers has started in 2006. In the first phase a parallel processing unit was established with 32 processing core and computational power of 64 GFlops
Specifications of ARI's Second Generation Parallel System
Processors
AMD Opteron Dual Core (16)
AMD Opteron Quad Core (16)
Main Memory
96 GB DDR2 ECC
Network
Infiniband 10Gbps
Computational Power
192 GFLOPS
Operating System
SUSE Linux Enterprise Server 10/ Win2003 Enterprise Server 64 bit
Rack
34 Unit 19' Standard
Other Equipments
Rack mount 19 " Monitor - 8Port KVM switch

HARDWARE

AMD Chips Used in Iranian HPC for Rocket Research

AN IRANIAN research institute claims that it used AMD Opteron microprocessors to build a high-performance computing system, one more sign that the U.S. trade embargo on Iran isn't hindering that country's ability to import high-tech equipment.

The Aerospace Research Institute of Iran (ARI) posted a document on its Web site that describes a high-performance computer using dual-core chips from Advanced Micro Devices Inc.

The ARI, a government ministry, was founded in 1999 to conduct "aerospace science and technology" research, according to its Web site.

The site says that the SUSE Linux-based HPC system was launched with 32 cores and now runs 96 cores. Its performance was pegged at 192 GFLOPS.

It's unclear exactly when the Iranians started building the system.

"It is more than troubling that an Iranian aerospace entity, affiliated with the government and involved in sophisticated missile research and production, is using U.S. computer equipment for its development work," said Valerie Lincy, editor of *Iran Watch*, a Web site published by the Wisconsin Project on Nuclear Arms Control.

In a statement, AMD said that it can't speculate as to how the processors could have been shipped to Iran.

"AMD has never authorized any sales or shipments of AMD products to Iran or any other embargoed country, either directly or indirectly," the company said.

Mehdi Noorbaksh, an associate professor of international affairs at the Harrisburg University of Science and Technology in Pennsylvania, said that Iran buys its technology mostly on the black market.

"That market provides Iran with what the authorities need for these projects," Noorbaksh said.

High technology from U.S. companies appears to be widely available in Iran. Various Iranian firms advertise servers, networking products and components from a variety of U.S. vendors on their Web sites.

The ARI disclosure comes two years after the Iranian High Performance Computing Research Center said that it had assembled a Linux-based supercomputer using 216 Opteron processing cores.

— Patrick Thibodeau

WEB 2.0

Twitter Links Iranians to Outside World

During the period of unrest following the disputed Iranian presidential election of June 5, the Twitter social network became something of a lifeline for the people of Iran.

While the Iranian government blocked various channels of communication – disabling phone lines, satellite links and even text messaging tools – citizens were able to tell the rest of the world about the situation there in 140-character bursts, at least through late last week.

In fact, Twitter Inc. acknowledged that the U.S. State Department asked it to delay scheduled site maintenance work early last week to allow Iranians to use the service.

In a blog post, Twitter cofounder Biz Stone noted that while "the State Department does not have access to our decision-making process," the company decided to postpone the maintenance for a day to show the "growing significance of Twitter as an important communication and information network."

– SHARON GAUDIN

Smarter technology for a Smarter Planet:

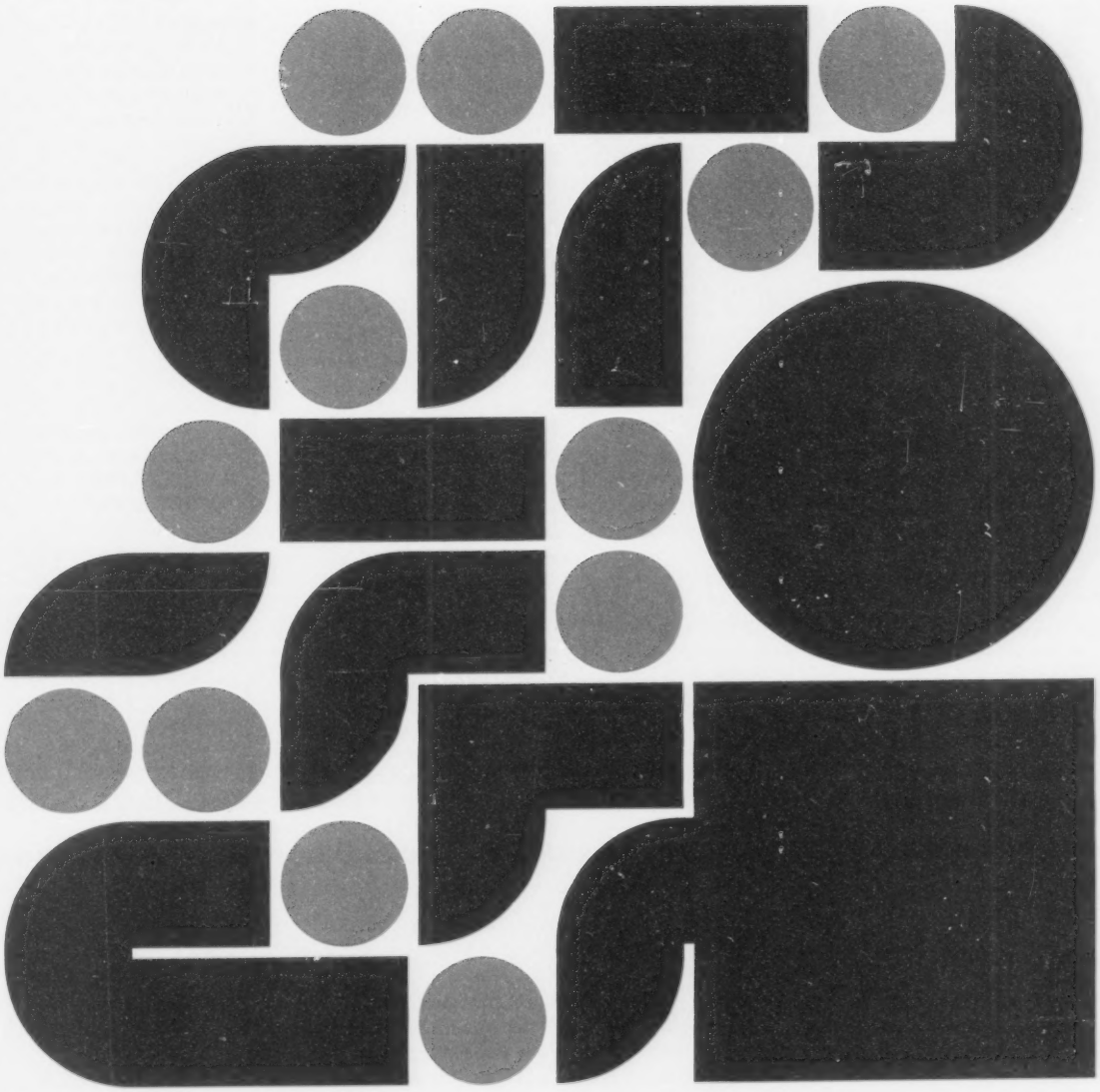
Can the boundaries of a business be defined by its people instead of its walls?

Businesses like nice solid walls, both the physical and the fire variety. But on a smaller, flatter, smarter planet, we increasingly find ourselves working with people far outside those walls: partners, suppliers, customers and remote employees. Instead of protecting, those nice solid walls stand in the way of how people want to work.

IBM is incorporating new tools like social software, wikis, blogs and presence awareness throughout its entire collaboration portfolio to help people in companies reach beyond their walls. The next challenge is to give people the tools they need anytime and anywhere they need them, not when their tech department has time to set them up.

That's why IBM is offering a new way of accessing its collaboration and social networking tools: through the cloud. To the individual, cloud-based tools like LotusLive™ let people work securely with whomever they want to, regardless of what side of the firewall they find themselves on. To the organization, these collaboration tools enhance the productivity of its employees without the cost and complexity of building and managing any additional infrastructure, giving them a seamless extension of their capabilities. And it's all backed by the legendary security that companies expect from IBM. So organizations don't have to tear down their walls to reach beyond them.

A smarter business needs smarter software, systems and services. Let's build a smarter planet. ibm.com/collaborate



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SECURITY

Heartland Commended For Breach Response

HEARTLAND Payment Systems Inc. CEO Robert Carr is getting high marks from some analysts for his response so far to a massive data breach discovered at the credit- and debit-card payment processor early this year.

The breach may have been the largest ever involving payment card data — some analysts estimate that data from more than 100 million cards may have been exposed in the intrusion, which Heartland disclosed on Jan. 20.

Heartland CEO Robert Carr accelerated an end-to-end encryption project after learning of a massive data breach at the company early this year.

Since then, Carr has moved to accelerate an end-to-end encryption project for protecting card data. It is now slated for completion in the third quarter.

Princeton, N.J.-based Heartland is also pushing for development of an industrywide standard for encrypting data while it's being transmitted over networks, and it has co-founded the Payments Processing Information Sharing Council, through which payment processing companies can share information about security threats, vulnerabilities and fraud.

In an interview last week, Carr said he has also reached out to customers, industry groups, security analysts and reporters to discuss the company's response to the breach.

Avivah Litan, an analyst at Gartner Inc., said Carr took a different approach than most CEOs have taken in similar situations.

"Generally when something like this happens, the CEOs hide," she said. "Some might question his real motives. But the bottom line [is], he is elevating the debate around card security and even got card companies to speak about end-to-end encryption."

Tom Wills, an analyst at Javelin Strategy and Research, said Carr's response compares favorably with that of El Al Airlines after a series of plane hijackings in the 1970s.

"El Al redesigned its security from the ground up and went on to build a reputation, one that it holds to this day, as the world's most secure airline," Wills wrote in an alert this month. Based on Carr's moves so far, "it's clear that Heartland intends to take the El Al route," Wills added.

Carr said the breach fulfilled one of his worst fears as CEO of Heartland. "It was devastating," he said. "People had asked me for years 'What keeps you awake at night?' and I would keep telling them it was the fear of a data breach."

— *Jaikumar Vijayan*

Short Takes

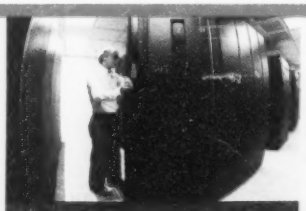
- Microsoft Corp. agreed to pay $40 million to Mississippi to settle an antitrust lawsuit the state filed against the company in 2004. The state said Microsoft also agreed to offer about $60 million worth of hardware and software vouchers to Mississippi consumers, businesses, government agencies and schools.
- The Mozilla Foundation issued patches for 11 vulnerabilities in the Firefox browser, more than half of them labeled "critical." The patches are the first that Mozilla has issued since April.
- Symantec Corp. has terminated its experimental GoEverywhere online data-sharing service, which users have been beta-testing since January. Company officials declined to comment.
- Sanjay Parthasarathy, corporate vice president of Microsoft's Business Startup Accelerator, said he will retire in September after 19 years at the company. Microsoft Corporate Vice President Amit Mital will replace Parthasarathy.

CLOUD COMPUTING

IBM Unveils Corporate Cloud Services

IBM last week rolled out a series of cloud computing offerings designed to support specific enterprise IT tasks.

The new product line, dubbed IBM Smart Business, focuses on delivering hosted tools and services for two tasks: virtual desktop management, and application development and testing, according to IBM.



An IBM cloud computing center

Services for both are available via IBM's network of cloud computing centers around the world or through cloud infrastructures built by IBM behind a customer's firewall.

In addition, IBM is offering CloudBurst appliances that are built to accommodate development and testing tasks.

IBM's goals are fairly obvious, said RedMonk analyst James Governor, via e-mail. "As far as the enterprise is concerned, cloud [computing] is the new VMware, and IBM wants a fat slice this time," he wrote.

For IT managers, a cloud-based application development service could significantly cut development costs, according to Governor. "Dedicated test and development servers are a real drain on enterprise computing resources," he wrote. "IBM is telling customers it can reduce the expense."

Kristof Kloeckner, vice president of strategy and technology in IBM's software group, said that the dedicated cloud products could be extended to enterprise applications if demand warrants it.

– CHRIS KANARACUS, IDG NEWS SERVICE

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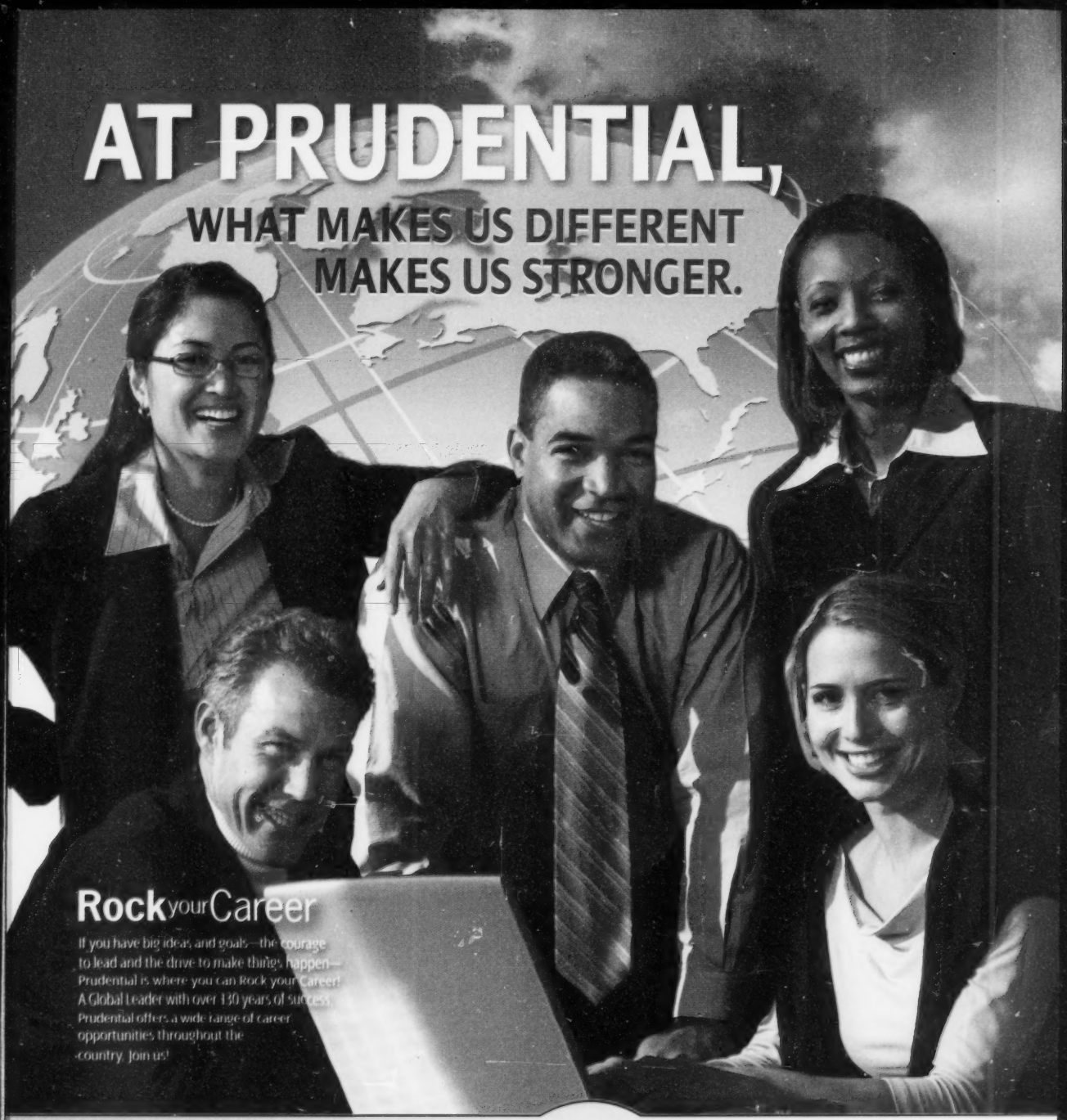
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GOVERNMENT IT

New Mexico Supercomputer Expectations Raise Doubts

A LEGISLATIVE advisory group is questioning whether a government-funded supercomputer can ever meet its goal of generating revenue and creating significant numbers of high-tech jobs in New Mexico.

A report released late last month by the New Mexico Legislative Finance Committee, which advises the state's legislature on fiscal issues, was skeptical about the future of the $36 million project, overseen by the New Mexico Computing Application Center (NMCAC).

> **"If it was just a computer, we wouldn't be any different from any other system in the country.**
>
> TOM BOWLES, SCIENCE ADVISER TO NEW MEXICO GOV. BILL RICHARDSON AND CHAIRMAN OF NMCAC

The New Mexico Legislature created the center in 2007.

Hopes were high at first for the supercomputer, called Encanto, which includes Silicon Graphics Inc. technology and 14,500 Xeon processors from Intel Corp.

Early on, it was ranked third on the Top500 supercomputer list. It has dropped to 12th on the list, and it may fall further when the new rankings are released next week at the International Supercomputer Conference in Germany.

Now, according the advisory group's report, "NMCAC's ability to continue as a going concern is in question."

When launched, the center was expected to generate $59 million for the state over six years by leasing cycle time on the machine and by winning government grants. The report projects that the system will generate about $2 million this year.

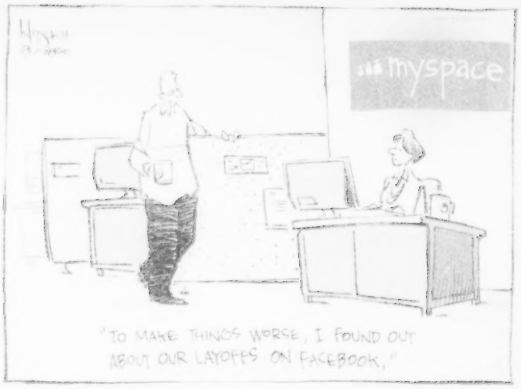
Reaching the financial goal "is going to be a challenge," acknowledged Tom Bowles, the science adviser to New Mexico Gov. Bill Richardson and chairman of NMCAC. However, he believes the center's primary attraction to potential customers is its working relationship with the Los Alamos and Sandia National Laboratories.

"If it was just a computer, we wouldn't be any different from any other system in the country," he said.

— Patrick Thibodeau

BETWEEN THE LINES

By John Klossner



BENCHMARKS LAST WEEK

Struggling MySpace Inc. laid off nearly 30% of its workforce, leaving the social networking company with about 1,000 employees.

Microsoft Corp. announced that it will let computer makers continue selling Windows XP-based PCs for 18 months after the release of Windows 7, or until the release of a service pack for the new software.

58 YEARS AGO: The U.S. Census Bureau dedicated its first Univac computer. The Univac I was the first commercial computer to attract widespread public attention.

Global Dispatches

China Licenses MIPS Technology

BEIJING – China's Institute of Computing Technology (ICT) has licensed the MIPS32 and MIPS64 chip architectures from MIPS Technologies Inc. for use in developing the institute's Loongson family of processors, MIPS said last week.

Their compatibility with the MIPS architecture means the Loongson chips, formerly named Godson, will support Google Inc.'s Android mobile device platform.

Sunnyvale, Calif.-based MIPS did not disclose the terms of the deal, which comes after years of talks with the institute.

The ICT, which is funded by the Chinese government, is charged with developing computer chips that Chinese companies can sell throughout the world.

Owen Fletcher, IDG News Service

Opera Unveils Unite Platform

OSLO – Opera Software ASA has released an alpha version of Unite, a technology platform that adds a compact Web server to its browser and lets users share files, photos and music without using third-party services.

The collaborative technology is embedded in Opera 10, the company's still-in-beta browser that will be released alongside Unite, said Christen Krogh, chief development officer at Opera, which is based here.

Krogh declined to say when the products will be generally available. The beta version of Opera 10 was released last week.

Gregg Keizer, with Mikael Ricknäs of the IDG News Service

BRIEFLY NOTED

Bull unveiled an energy-efficient, water-cooled supercomputer that can run up to 18 blade servers, each running two quad-core Intel Xeon 5500 processors, in a single chassis. The Bullx supercomputer can run either Red Hat Enterprise Linux or Windows HPC Server 2008, according to the French company. Bull said the price tag can reach tens of millions of euros depending on system configuration.

Mikael Ricknäs, IDG News Service

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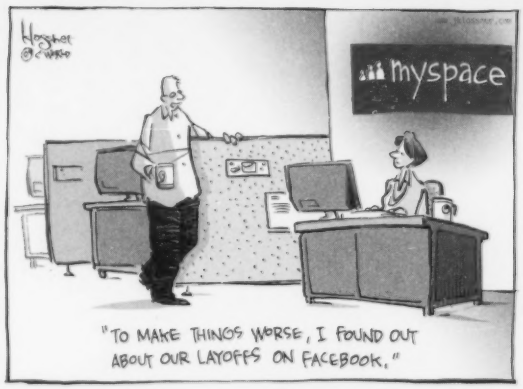

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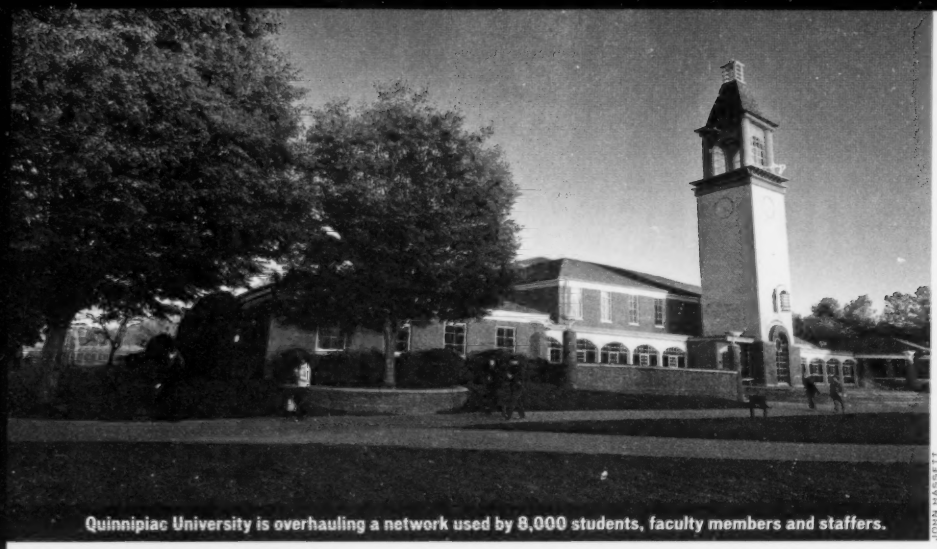

Quinnipiac University is overhauling a network used by 8,000 students, faculty members and staffers.

JOHN HASSETT

■ NEWS ANALYSIS

University Picks 3Com Switches Over Cisco's

Video is a major driver of network growth on the Quinnipiac campus. By Matt Hamblen

QUINNIPIAC University in Hamden, Conn., is using 3Com Corp.'s new H3C core and edge switches in a total network upgrade that will replace and expand upon a system based on gear from Cisco Systems Inc.

The project, valued at less than $1 million, includes the installation of several H3C data center switches and more than 100 H3C edge switches to upgrade a network used by a community of about 8,000 students, faculty members and staffers, according to IT managers at the school. 3Com launched the H3C brand in May in the U.S.

A major driver of the upgrade is the increased use of video technology by students and faculty alike, said Brian Kelly, director of information security and network operations at the school.

"Two years ago, I was trying to block use of YouTube by undergraduates," he said. "But following the [2008] presidential election, the use of that has morphed and even faculty are using it in the classroom. Video is driving bandwidth and capacity planning."

Fred Tarca, associate vice president of information services, said the university also hopes that the upgraded network will help it accommodate a planned expansion of its online curriculum, which is laden with streaming video and audio features. He added that the upgraded network should also help Quinnipiac better compete with other universities for top students. "The students want the same Internet experience as they get at home," he said.

The university's network also includes a two-way real-time videoconferencing system based on Microsoft Corp.'s Office Communications Server and wireless gear from Aruba Networks Inc.

In the latest upgrade, core H3C S9500 switches were recently installed in several school facilities and are currently being configured. The 100 H3C S5500G edge switches are now being installed in wiring closets in various buildings, a task that is slated to continue through the summer. The school plans to use a hybrid network with its current core Cisco gear operating alongside the new H3C equipment for an undetermined period of time, Tarca said.

COST CONSIDERATIONS

The IT managers said the university evaluated products from multiple vendors, including Cisco, before deciding to use the 3Com equipment. They noted that the selection process included plenty of scrutiny of 3Com because of its widely publicized past financial problems.

Ultimately, 3Com was chosen because officials determined that its products could help keep Quinnipiac's upgrade costs affordable, and because they favored the support package the vendor offered, Tarca said.

Tarca conceded that "there's some risk" in choosing 3Com rather than a bigger vendor. "Several of my peers were curious as to why we left the mother ship [of Cisco] . . . but it all fits into a risk-reward ratio," he said.

"No matter which vendor we looked at, it came down to Cisco or non-Cisco — and Cisco does have $30 billion in cash," Tarca added. "But we stuck with our fundamental principles of wanting a good product at the right price that is supportable, with a team and a company to back it up. Those requirements were met by 3Com."

Kelly said he asked companies that were competing for the contract to offer reasons why the university shouldn't use 3Com, but he received few responses.

He also noted that the university installed 3Com's TippingPoint intrusion-protection system about two years ago and has had no major network breaches since.

Zeus Kerravala, an analyst at Yankee Group Research Inc., said that given Cisco's dominance of the router business, "bucking the trend is always risky." He noted that 3Com probably isn't supported by nearly as many resellers and integrators as larger companies like Cisco are. "But I'm sure the college got a good deal," he added.

Cisco products tend to cost more than competing offerings, but they're considered highly reliable and innovative, making them suitable for sophisticated networks.

Nonetheless, said Kerravala, "3Com has solid gear that is well built and well engineered." ■

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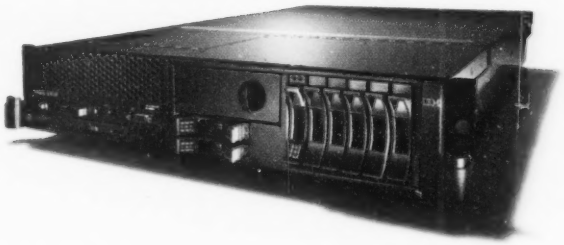

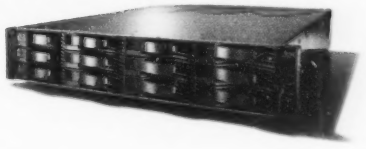

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Open-source routers like this Vyatta device are gaining ground among enterprise users, including the New Mexico Supreme Court and the University of Florida in Gainesville.

OPEN-SOURCE ROUTERS ARE BECOMING AN IT OPTION

The technology is slowly gaining the confidence of some early adopters.

By John Edwards

MANY LARGE IT operations are extensively using open-source technology — in operating systems, applications, development tools and databases. So why not in routers, too?

It's a question Sam Noble, senior network system administrator for the New Mexico Supreme Court's Judicial Information Division, pondered while looking for a way to link the state's courthouses to a new centralized case management system.

Noble wanted an affordable and customizable DSL router but found that ISP-supplied modems lacked the ability to remotely monitor local link status, a key requirement of the courts.

Another alternative, adding ADSL cards to the 2600 series frame-relay routers from Cisco Systems Inc. used at some courthouses, provided key features, but the aging devices lacked the power needed to support firewall performance.

A third option, Juniper Networks Inc.'s NetScreen SSG20 firewall/router with an ADSL option, "lacked many of the features we wanted, like full-featured command lines and unlimited tunnel interfaces," Noble said.

Frustrated, Noble decided to investigate yet another possibility: open-source routers. The technology is emerging but still isn't a favorite among corporate IT managers.

Noble first downloaded open-source router software distributed and supported by Belmont, Calif.-based Vyatta Inc. onto a laptop and ran some preliminary tests. "I was especially interested in whether the administrative interfaces were complete and feature-full," he said.

Impressed by the initial results, Noble created a prototype site in Santa Fe to study the technology's performance, cost-effectiveness and ability to work with other technologies used in the courts. "We needed to bring up a DSL connection for testing and to work out the best configuration without impacting our production network," he said.

The tests convinced Noble that the open-source router could provide what he wanted. He also noted that its VPN concentrator, support for the Border Gateway Protocol, and URL filtering and packet-capture security features "would have been unavailable or very costly to add to Cisco or NetScreen equipment."

In April 2008, Noble began deploying Vyatta router appliances to an average of two sites each month. When the project is completed over the next year or so, the routers — 514 in all — will connect 40 to 50 sites around the state to the centralized case management system.

POTENTIAL PROBLEMS

Analysts and users note that IT managers exploring the use of open-source routers should be aware of potential support and compatibility issues that could come with any open-source product. "You have to be careful during deployment," said Mark Fabbi, an analyst at Gartner Inc. "It's not ready to take over the world yet, but it certainly is providing an interesting base of discussion."

Trey Johnson, an IT staff member at the University of Florida in Gainesville, said that choosing a noncommercial technology with a limited enterprise-level track record could pose problems for IT managers. "That makes a hard sell for going into a business model with it," Johnson said.

The university uses an open-source router supported by Vyatta. "[The router] actually has a company backing it — you can buy support for it, which makes it more viable," Johnson said.

Others say that community support, an open-source hallmark, can cut two ways in an enterprise setting. Communities don't usually respond as quickly as IT managers would like, and they don't offer inexperienced users one-on-one instruction.

Noble and Johnson are two among a small but growing number of IT managers eschewing proprietary routers in favor of open-source alternatives for a variety of reasons.

Noble, for example, says pain-free customization is the technology's biggest benefit. "The flexibility of having a free software stack built into our routers will let us make a small change — a tweak — or an addition, and be able to continue with minimal impact on long-range plans."

Barry Hassler, president of Hassler Communication Systems Technology Inc., an ISP and network designer in Beavercreek, Ohio, said he uses IProute, a Linux-based open-source routing technology distributed by the Linux Foundation, to provide his company's large users with enterprise-level Internet access at an affordable price. "I'm using standard PC hardware, running Linux, with the routing functionality built in," he says. "What we're doing with these boxes is routing among multiple interfaces, which is fairly standard routing, but beyond that, we're also able to do bandwidth management."

Hassler estimated that a comparable Cisco router would cost more than twice as much as the Linux-based IProute router he chose. "That helps keep [overall] costs low," he says.

IT consulting firm CMIT Solutions of Central Rhode Island has installed open-source DD-WRT firmware in both of its Linksys wireless routers to gain additional capabilities, said Adam Tucker, a network engineer at the firm. "We wanted a robust wireless system that would allow us to manage quality of service for prioritizing voice over IP [and] things like that, as well as to add some of the more advanced filtering and stuff the [old] firmware simply didn't support," he says.

Tucker said the routers have worked flawlessly for well over a year.

Fabbi said he sees significant potential for open-source routers, particularly in the retail and food services industries, where large companies must often link thousands of sites without breaking the budget. "You think of a McDonald's or a Burger King [where] there are tens of thousands of franchisee-type locations but you still want them connected," he said.

In other industries, open-source technology is well suited for server-based routing applications, including virtualization, Fabbi added. He noted that virtualized router applications are limited only by developers' imaginations. "Sometimes it's something as simple as a distributed print server; other times it's video distribution caching."

READY FOR THE ENTERPRISE?

Matthias Machowinski, an analyst at Infonetics Research in Campbell, Calif., said he believes that open-source routers are now capable of handling enterprise-level workloads. "If you have reasonable requirements — a regular-size office or a normal amount of traffic — then performance-wise, they should be able to handle the traffic load," he said. The only exceptions he cited are large companies that run an extraordinary amount of traffic, such as video content distributors.

Open-source routers are also starting to hold their own on the features front, Machowinski said. "They started out not being as feature-rich as some of the mainstream commercial [products], but open-source router vendors have narrowed that gap," he said.

Open-source routers come in three basic forms: software that transforms a standard PC or server into a combination router and firewall, firmware that can be inserted into an existing router, and appliances that come with open-source routing software preinstalled. In addition to Vyatta, DD-WRT and IProute, open-source routing technologies include Xorp, downloadable at Xorp.org; and pfSense, a free, open-source distribution of the FreeBSD operating system customized for use as a firewall and router.

Despite a steadily rising profile and a growing number of adherents, open-source routers aren't likely to topple the market status quo anytime soon. That's because the open-source field remains microscopic compared with the market share held by the top proprietary vendors, particularly router giant Cisco, which has about 80% of the overall market. But even Cisco has recently begun making overtures in the open-source world. ■

Edwards *is a technology writer in the Phoenix area.*

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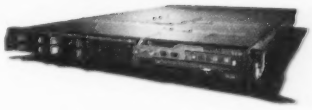

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Dossier

Name: Bruce Bueno de Mesquita

Title: Julius Silver Professor of Politics at New York University; senior fellow at the Hoover Institution at Stanford University

Locations: New York and San Francisco

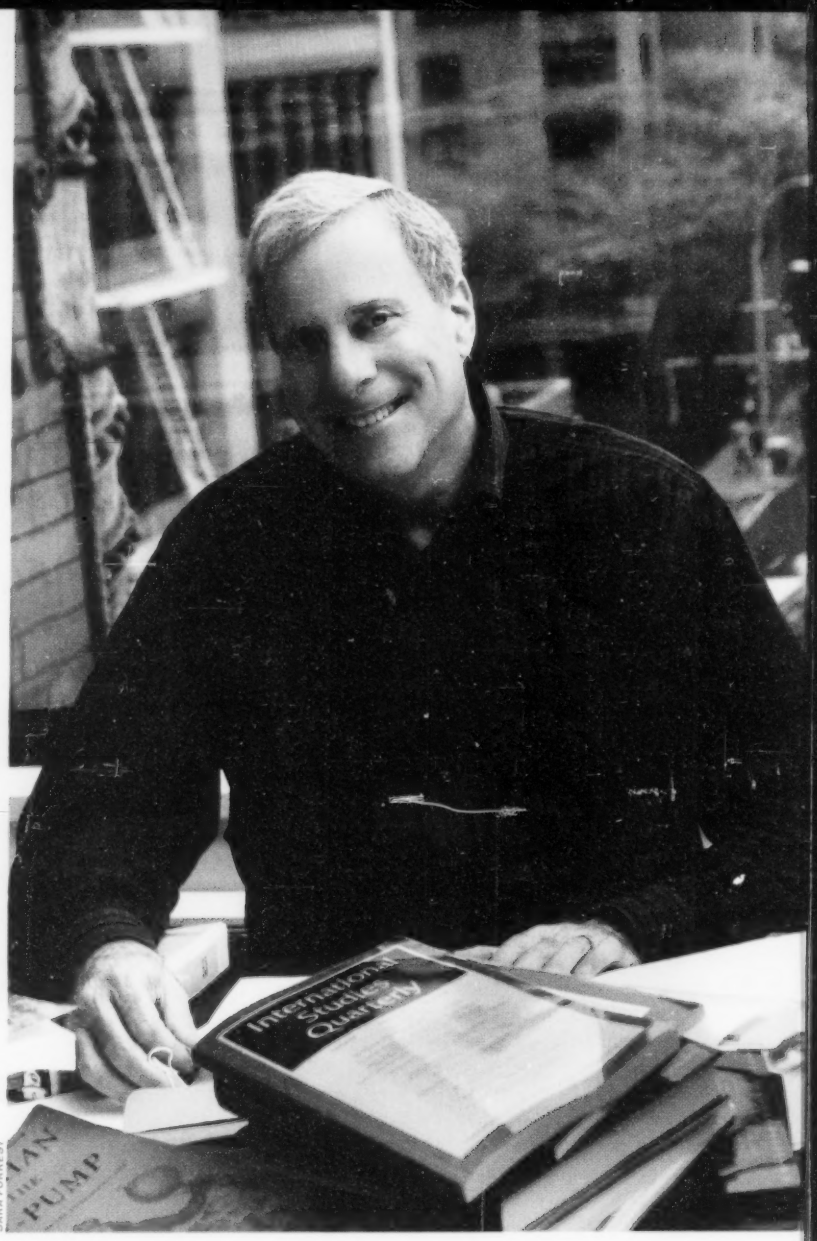
Most interesting technology: Writing

Philosophy in a nutshell: "Try to do your best without getting in anyone else's way."

Dream dinner guests: "My family."

Favorite music: "Classical and Scottish border war ballads."

Favorite books: *The Island at the Center of the World*, by Russell Shorto; and *Crime and Punishment*, by Fyodor Dostoevsky



SARA FORNEST

■ THE GRILL

Bruce Bueno de Mesquita

His **computer model** can predict the outcomes of **international conflicts.** He explains **how it works,** and the reaction from the **political science** community.

Bruce Bueno de Mesquita teaches international politics at New York University and consults for the Pentagon and the private sector. He applies his predictive computer models to national security issues, public policy debates, mergers and acquisitions, legal proceedings and questions regarding regulation, corporate fraud and more.

Can you tell me a little bit about how you got to where you are today? How did you come to combine computer and political science? In the late 1970s, I was doing research for a book on war. That book attempted to build a general model of decision-making related to conflict. While I was working on that project, I was asked by an official at the Department of State to give my view of what was likely to happen in India following the collapse of its government. It occurred to me that the political infighting between parties was not much different — except for the stakes — than the tensions and stresses that characterize choices about war and peace. I decided to construct a data set based on my knowledge of India's political parties and their leaders and feed it into the primitive model I was working on at the time for my war project.

To my surprise, the model's output led to a prediction entirely different from my personal judgment. In any event, my personal opinion turned out to be wrong and the model's prediction turned out to be correct.

That led me to build a larger sample of applications to see whether I had been lucky or whether I had found a model with some predictive reliability. As it turned out, the model got right the next 17 cases it was applied to, and at that point I concluded that probably there was some genuine explanatory power behind the model's logic. Although prediction has never been the main activity in my research and teaching life, it has continued to occupy a niche in my research and teaching.

Your computer model has been used by the Department of Defense to help predict political outcomes across the globe. How does it work? The model starts by assuming that everyone cares about two dimensions on any policy issue: getting an outcome as close to what they want as possible, and getting credit for being essential in putting a deal together — or preventing a deal. The model estimates the way in which individual decision-makers trade off between credit and policy outcomes. Some are prepared to go down in a blaze of glory seeking the outcome they want, knowing they will lose. Others have their finger in the wind, trying to figure out what position is likely to win and then attach themselves to that position in the hope of getting credit for promoting the final agreement.

How has the political science world taken to the introduction of mathematics and computers? The response has been divided. Those more oriented toward quantitative modeling are generally supportive, sometimes enthusiastic and sometimes well-informed critics. Those whose approach tends toward area studies or historical case study analysis tend to be dismissive of technical approaches to studying politics.

Your model is based on game theory. What is this exactly, and how does it pertain to your model? Game theory is a mathematical structure for examining how people, for instance, interact strategically, each taking into account the expected responses of others and recognizing that others are taking into account that their responses are being taken into account, etc. Game theory just involves people who are assumed to be pursuing their interests and who do what they believe — perhaps mistakenly — will give them the best available outcome, given the constraints under which they must make choices. These constraints can involve limitations to their resources, their beliefs about the intentions of others, and many other sources of uncertainty and of risk.

Computers have made huge technological leaps since you created the model 25 years ago. How has your model changed? Although the logic behind models such as mine could have been developed

> **"Today there is essentially no memory constraint and no processing constraint for the sort of modeling I do.**

100 years ago, it would have been very difficult and costly to produce useful analyses in a timely fashion. Even when I started doing forecasting 27 years ago, computer power was so limited that I could only examine problems with relatively limited numbers of players. Today there essentially is no memory constraint and no processing constraint for the sort of modeling I do.

How do you keep personal viewpoints and bias out of the initial input? I cannot look at a data set and anticipate what the outcome will be from the model. This is true even with a data set with as few as three or four players. The problems I look at with my model typically involve many dozens of players, sometimes more than 200. There is no way to construct biased data to produce a desired outcome except to make the data appear transparently wrong to anyone looking at the data. For instance, we could produce peace between the Israelis and Palestinians by assuming they agree on everything, but that would not be taken seriously. Realistic data need to reflect the current status quo. Then how things evolve is driven by the model's logic. I teach students how to construct data sets, and they always check, for instance, that the initial round's outcome looks like the current status quo, because that is what the data should reflect if they are realistic.

A robot can only do what it's told. At any point, do you have to step in and account for the fact that computers don't have emotions to help polish an outcome? When I report results, I leave it to experts to dig into the interpretive nuances of the analysis. I limit myself to reporting only what I can show in the model's output. Part of the point behind a model such as this is for users to realize it is just a model and not a replication of reality in all its subtlety. Instead, the model should help push people to think about contingencies they had not considered but that emerge from the modeling exercise.

The question of ethics is different from stepping in and substituting personal judgments about emotions, feelings, etc. I impose limits on the things I am willing to examine with the model based on my sense of propriety, but I do not presume answers to questions and choose on that basis. I will not address a question that I view as immoral or improper and have turned down requests on those grounds.

Predicting the future of international conflicts is stressful business. What do you enjoy outside of work? I don't find doing forecasts in the least stressful. It is a great pleasure to see basic research translated into a practical tool for assisting policymakers. And this is far from the main strand of my research. Outside of work I enjoy visiting my children and grandchildren, travel, playing squash and hiking.

— Interview by **Sara Forrest,** *a freelance photographer and writer in New York (studio@saraforrestphoto.com)*

Corporate IT Done 'Lite'

CIOs are turning to cheap, lightweight Web 2.0 and open-source tools to get the job done fast. By Julia King

SAN ANTONIO-BASED CPS Energy, the largest municipality-owned gas and electric company in the country, needed to get a better grip on its budget and its budgeting process. Since CPS Energy was an enterprise SAP user, more SAP AG software was the obvious and lowest-risk way for CIO Christopher Barron to go.

Instead, he opted for software from a far lesser-known vendor at a far lower price — about four times less.

Similarly, CIO Jamie Kutzer had considered buying "a big-name intranet package" from a top-tier software vendor as the tool to drive online collaboration across Allied Building Products Corp.'s 200 branches.

"But it was just too costly, too big — and frankly, I don't know if we were ready for the big leap," Kutzer says. "So we're using smaller, lighter and cheaper technologies from companies that I had never heard of but that my Web services team knew about. They provide a much, much lower cost of entry."

As the ongoing recession continues to choke IT capi-

Continued on page 22

BRIAN STAUFFER

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Continued from page 19

tal spending, buying integrated software from big-name vendors is on the way out — fast. What's in is "IT lite," which includes Web 2.0 technologies and services that are cheaper and easier to implement, mix and match. It also includes software from no-name, up-and-coming vendors; open-source tools and applications; and an ever-widening variety of tools for mapping, chat and more that are available for free on the Internet.

The trend makes perfect sense in a form-follows-function kind of way, says Vinnie Mirchandani, a former Gartner Inc. software analyst and founder of Deal Architect Inc., a consulting firm that helps large corporate enterprises evaluate software and negotiate contracts.

"If you and I can buy storage at 10 cents a gigabyte, why are corporations paying [a] hundred times as much?" Mirchandani wrote in a recent blog post. "If at any given time, millions of consumers are talking to each other around the world on Skype for free, why are mobile companies charging you exorbitant roaming fees? If anyone can call the Geek Squad and get a one-time PC repair visit, why is your desktop outsourcer not charging you on a per-usage basis, rather than some monthly charge?

"Consumerization of technology should be a broad manifesto for change in corporate IT and enterprise vendors," Mirchandani continued. "Let's face it — we are slower, uglier, exorbitantly expensive, obsessed with security and compliance." As he sees it, it's time for an extreme makeover.

SPEED MATTERS

"One of the biggest reasons people are willing to go to small vendors today is, the risk associated with having a project fail is much smaller financially," explains Barron. "With implementations involving large enterprise software vendors, a lot of times you don't understand if you failed until you're a year and a half into the project. Because it has so many intricacies and takes so much collaboration between IT groups, it can take four months to gear up for the project, then seven months to implement, and by then it has taken a lot of money."

"We have tactical war commanders who use small chat rooms on the battlefield, and we're leveraging wikis to enable us to more quickly develop shared intelligence on a particular situation or event.
DAVE MIHELCIC, CTO, DISA

In comparison, "with software from smaller vendors, it can take 20% to 40% less time to implement, and if it works, it could save you between three and eight times as much," Barron adds.

The catch, of course, is that it doesn't always work. But even failing seems to be cheaper than going with the big guys.

For example, CPS Energy bought a $250,000 business process modeling application that Barron says would have cost about $3 million had he purchased a similar system from SAP or Oracle Corp. Although it was a well-designed piece of software, the lower-cost package didn't work out because it didn't easily interface with CPS Energy's installed MQSeries middleware and would have cost another $250,000 to customize.

"In the end, it didn't work the way we needed it to work, but it cost $500,000, not $3 million," Barron says.

But lower cost is just one of many reasons users cite for turning to smaller, lighter, less-expensive technologies. Much of the newer, consumer-oriented Web 2.0 technology is also faster and far more effective in fostering communication and collaboration, which is a primary goal for organizations with increasingly dispersed workforces. The U.S. Department of Defense, for example, has adopted both Web-based chat and wikis as standard communication tools, even in battle.

"We have tactical war commanders who use small chat rooms on the battlefield, and we're leveraging wikis to enable us to more quickly develop shared intelligence on a particular situation or event," says Dave Mihelcic, chief technology officer at the Defense Information Systems Agency (DISA).

Mihelcic says the DOD also has "free and ready access" to Intellipedia, an online system for collaborative data sharing that was developed and is used by the U.S. intelligence community. The system consists of multiple wikis used by individuals with appropriate clearances from more than a dozen agencies and national security organizations, including combatant commands.

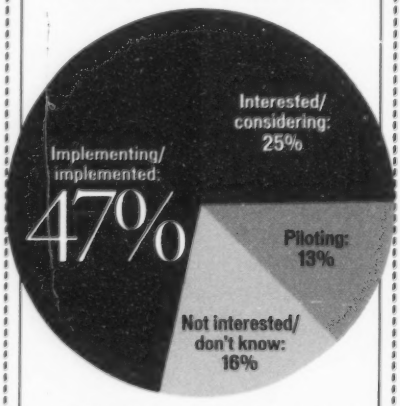
"Before, we were using e-mail and PowerPoint, and you know the limitations of those technologies," Mihelcic says. "With a wiki, it takes seconds to get knowledge online."

"By providing collaboration on an enterprise level, we can also communicate across organizational boundaries," adds Rebecca Harris, head of global information grid enterprise services at DISA. "It provides us with a way to invite in, at a moment's notice, unanticipated users to help with problem resolution. It really is a different way of providing a traditional capability."

The overall goal is to "crush the hierarchy of information in the DOD," says John Garing, DISA's CIO and director

Corporate Web 2.0

STATUS OF WEB 2.0 TECHNOLOGIES



Base: 735 North American companies; percentages don't add up to 100 because of rounding.
SOURCE: FORRESTER RESEARCH INC., 2008

A Call to Experiment

MANJIT SINGH is responsible for IT at a $3 billion Fortune 500 company with operations in 70 countries on six continents. He's also a technology executive who believes that experimentation is a good thing – especially if it saves money.

As CIO at Chiquita Brands International Inc., Singh was one of the first high-profile users of software-as-a-service. Now he's back at the leading edge, deploying wikis, expanding Chiquita's VoIP usage and looking to do more with open-source software.

"CIOs as a group are very risk-averse. As a result, we don't tend to embrace the new technologies as much as we should," Singh says. "But the economy has forced people to take a more serious look at this. I think it's good. This is a paradigm shift that will be around long after the economy recovers."

At Chiquita, Singh says, "we're constantly looking at things, trying to figure out if there is a different way to achieve the same benefit or value." For example, the company relies heavily on VoIP throughout its remote operations in Central America. Now, Singh says, Chiquita is getting more aggressive about deploying VoIP in other regions, notably Europe. Chiquita recently fully VoIP-enabled its headquarters in Switzerland.

"For us, it was a step in a different direction," he says. "Now is the time for experimentation."

–JULIA KING

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Garing says DISA IT personnel have visited Google Inc. several times to learn how the company handles product development. "They do things in small teams and bites and constant beta testing," he says. "They can add things to the network quickly, and if they're not a hit, they can kill them fast. We also need to be able to move things quickly before they get to be monolithic programs."

Garing's IT team also visited Amazon.com Inc. to study how it provisions Internet cloud-based storage on an as-needed basis. "We studied how they were delivering that service," he says, and now, instead of waiting weeks or months to have hardware or software installed, DOD personnel can buy capacity on demand through a DISA service called RACE, for rapid-access computing environment.

DISA's GARING: "Senior leaders want information to flow very quickly."

Unlike the many CIOs who cite the economy as a key factor driving accelerated adoption of Web 2.0 technologies, Garing says DISA is "really aimed at getting speed and capability into the hands of people quickly."

Kutzer at Allied Building Products wants all of that, along with lower costs upfront, plus an immediate return on investment.

"We're focusing on the near term like never before," Kutzer says. "Given the new state of [economic] affairs, if you're going to buy a new technology, it's going to have to help me this year. Cash is king right now, and everyone is hunkered down over their balance sheet.

> **"We're trying to be creative and imaginative without overstepping capital expense restrictions."**
>
> **JAMIE KUTZER,** CIO, ALLIED BUILDING PRODUCTS CORP.

"We're trying to be creative and imaginative without overstepping capital expense restrictions," he adds. "The way to do that is to bring in smaller solutions to meet acute needs. In the past, we may have tried to kill 10 birds with one stone."

For example, Kutzer says Allied recently bought a small mapping application from a vendor he had never heard of. "We didn't overinvest. We spent less than $1,000 on something that we think is going to add value immediately in our Web services environment."

Still other companies, like $6 billion GAF Materials Corp. in Whippany, N.J., are tapping more deeply into the Web 2.0 capabilities of already-installed software, such as Microsoft's SharePoint, to leverage the collective knowledge of their workers.

"In my industry, it's unheard of to be thinking this way," says Adam Noble, GAF's CIO. "Historically, it has all been one-way communication. But now, engineering and product development groups are using blogs to share ideas, and what it's doing is driving product innovation."

Noble, for one, believes that having a Web 2.0 strategy is an absolute must, regardless of budgetary constraints and/or old-school processes. "If you take the position that 'we don't do social networking,' your resources are going to go for it anyway. If you don't do it internally, your corporate information will be on Facebook."

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Continued from page 19

tal spending, buying integrated software from big-name vendors is on the way out — fast. What's in is "IT lite," which includes Web 2.0 technologies and services that are cheaper and easier to implement, mix and match. It also includes software from no-name, up-and-coming vendors; open-source tools and applications; and an ever-widening variety of tools for mapping, chat and more that are available for free on the Internet.

The trend makes perfect sense in a form-follows-function kind of way, says Vinnie Mirchandani, a former Gartner Inc. software analyst and founder of Deal Architect Inc., a consulting firm that helps large corporate enterprises evaluate software and negotiate contracts.

"If you and I can buy storage at 10 cents a gigabyte, why are corporations paying [a] hundred times as much?" Mirchandani wrote in a recent blog post. "If at any given time, millions of consumers are talking to each other around the world on Skype for free, why are mobile companies charging you exorbitant roaming fees? If anyone can call the Geek Squad and get a one-time PC repair visit, why is your desktop outsourcer not charging you on a per-usage basis, rather than some monthly charge?

"Consumerization of technology should be a broad manifesto for change in corporate IT and enterprise vendors," Mirchandani continued. "Let's face it — we are slower, uglier, exorbitantly expensive, obsessed with security and compliance." As he sees it, it's time for an extreme makeover.

SPEED MATTERS

"One of the biggest reasons people are willing to go to small vendors today is, the risk associated with having a project fail is much smaller financially," explains Barron. "With implementations involving large enterprise software vendors, a lot of times you don't understand if you failed until you're a year and a half into the project. Because it has so many intricacies and takes so much collaboration between IT groups, it can take four months to gear up for the project, then seven months to implement, and by then it has taken a lot of money."

"We have tactical war commanders who use small chat rooms on the battlefield, and we're leveraging wikis to enable us to more quickly develop shared intelligence on a particular situation or event.

DAVE MIHELCIC, CTO, DISA

In comparison, "with software from smaller vendors, it can take 20% to 40% less time to implement, and if it works, it could save you between three and eight times as much," Barron adds.

The catch, of course, is that it doesn't always work. But even failing seems to be cheaper than going with the big guys.

For example, CPS Energy bought a $250,000 business process modeling application that Barron says would have cost about $3 million had he purchased a similar system from SAP or Oracle Corp. Although it was a well-designed piece of software, the lower-cost package didn't work out because it didn't easily interface with CPS Energy's installed MQSeries middleware and would have cost another $250,000 to customize.

"In the end, it didn't work the way we needed it to work, but it cost $500,000, not $3 million," Barron says.

But lower cost is just one of many reasons users cite for turning to smaller, lighter, less-expensive technologies. Much of the newer, consumer-oriented Web 2.0 technology is also faster and far more effective in fostering communication and collaboration, which is a primary goal for organizations with increasingly dispersed workforces. The U.S. Department of Defense, for example, has adopted both Web-based chat and wikis as standard communication tools, even in battle.

"We have tactical war commanders who use small chat rooms on the battlefield, and we're leveraging wikis to enable us to more quickly develop shared intelligence on a particular situation or event," says Dave Mihelcic, chief technology officer at the Defense Information Systems Agency (DISA).

Mihelcic says the DOD also has "free and ready access" to Intellipedia, an online system for collaborative data sharing that was developed and is used by the U.S. intelligence community. The system consists of multiple wikis used by individuals with appropriate clearances from more than a dozen agencies and national security organizations, including combatant commands.

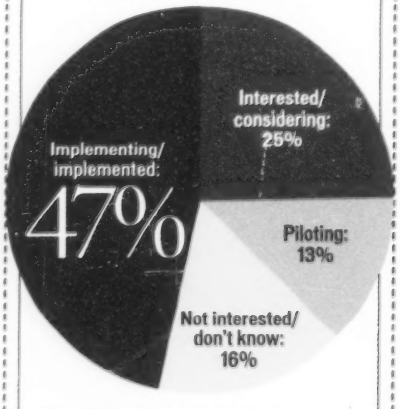
"Before, we were using e-mail and PowerPoint, and you know the limitations of those technologies," Mihelcic says. "With a wiki, it takes seconds to get knowledge online."

"By providing collaboration on an enterprise level, we can also communicate across organizational boundaries," adds Rebecca Harris, head of global information grid enterprise services at DISA. "It provides us with a way to invite in, at a moment's notice, unanticipated users to help with problem resolution. It really is a different way of providing a traditional capability."

The overall goal is to "crush the hierarchy of information in the DOD," says John Garing, DISA's CIO and director

Corporate Web 2.0

STATUS OF WEB 2.0 TECHNOLOGIES



Base: 735 North American companies; percentages don't add up to 100 because of rounding.

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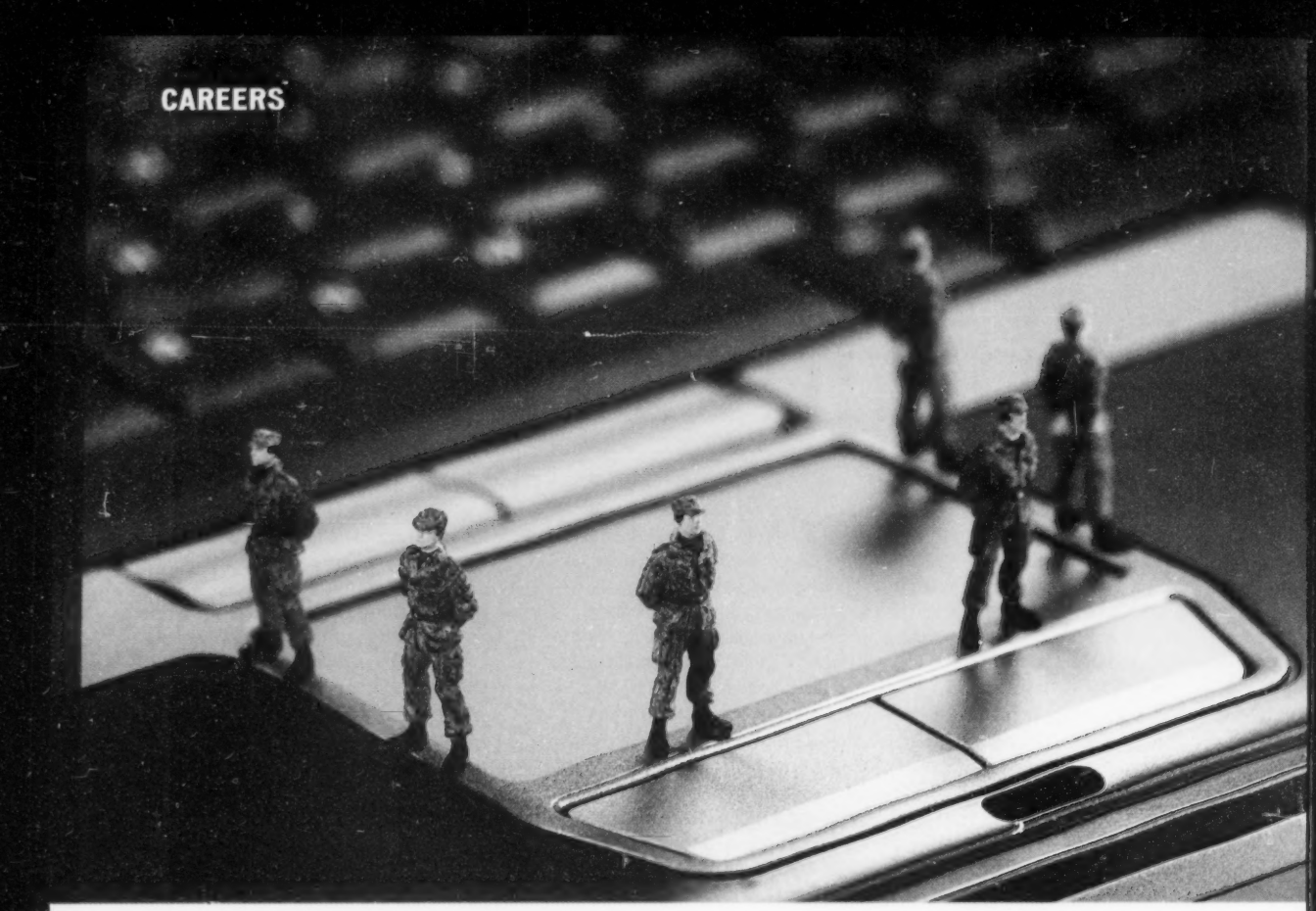

Enlisting In IT

© FOTOLIA / AMY WALTERS

MIKE ADAMS' story is a good-news one. After 20 years in the U.S. Navy, he was forced to retire in September 2006 after a herniated disk and knee problems left him unable to lift heavy objects or climb steps. Having served in the military since he was 17 — and suddenly dropping from an annual salary of $80,000 to a small retirement check — Adams was grappling with how to transition into a civilian career.

"I had to start all over again," he says. With a young son (and now a second child) and a wife who works as a schoolteacher, "retirement was not high on my list of things to do," he explains.

Through a friend, he obtained a part-time position at Granby High School in Norfolk, Va., as a network engineer, since he had some basic knowledge of computers. But as a machinist's mate in the Navy, Adams knew more about hydraulics than hard drives, so he began researching formal education opportunities to increase his standing

Continued on page 26

VETERANS FIGHT THE UNEMPLOYMENT ODDS WITH THE HELP OF FREE CERTIFICATIONS THROUGH THE COMPTIA EDUCATIONAL FOUNDATION. BY MARY BRANDEL

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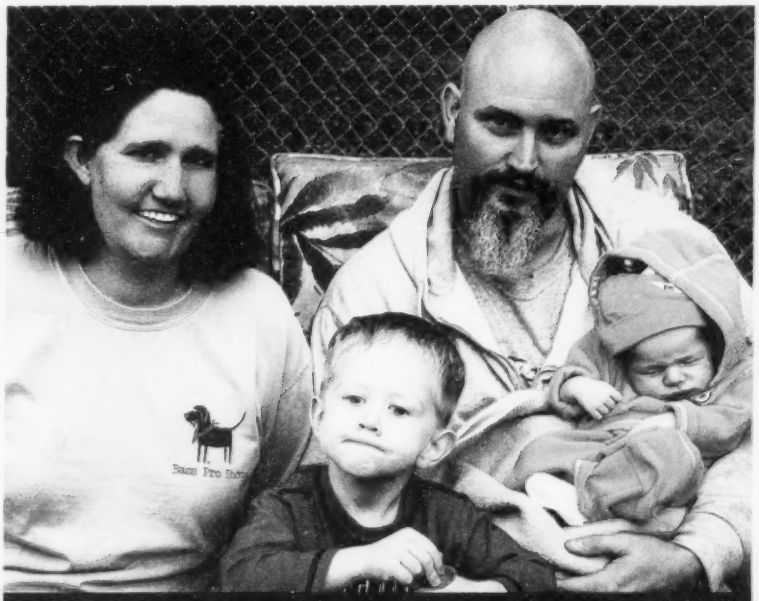
Continued from page 24

in the IT profession. He read about a program run by the Computing Technology Industry Association's CompTIA Educational Foundation, whose mission is to provide career opportunities for populations historically underrepresented in IT, including veterans, at-risk youth, women, minorities and individuals with disabilities. The program, called Creating Futures, enables participants to prepare for and obtain four IT certifications free of charge.

The CompTIA Educational Foundation has launched IT careers for more than 223 military veterans in the past three years, according to the foundation's president, John Venator. It hopes to serve more than 600 this year, thanks to a $210,000 grant from Major League Baseball and the McCormick Foundation. As of March, 110 people had enrolled in this year's Creating Futures program; half were veterans, and one-third of the vets had service-related disabilities.



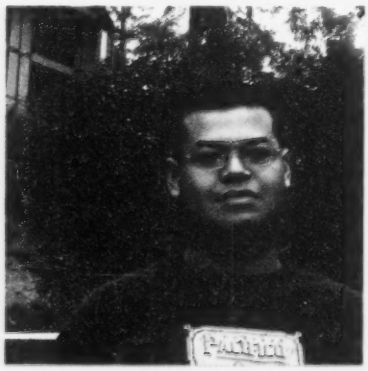
MIKE ADAMS

After 20 years in the U.S. Navy, Adams was forced to retire because of injuries. With a young son (and now a second child) and a wife who works as a schoolteacher, "retirement was not high on my list."

BEATING THE ODDS

Adams obtained CompTIA's A+ certification in a month's time and was offered a full-time position at the high school in March 2007, just four weeks later. He's now working on CompTIA's Server+ certification and plans to study for the organization's Network+ certification. He's able to study online, which allows him to take a self-paced approach that fits in well with his lifestyle, he says, especially since his pain medication often interrupts his sleep. "If I wake up in the middle of the night, I can just sign on," he says.

Unfortunately, success stories like Adams' aren't universal among the 300,000 military personnel who complete their active duty every year and try to find civilian jobs. According to the U.S. Bureau of Labor Statistics, the



DAVID GOMEZ

Miami

SERVICE: Joined the U.S. Army in August 2003. Ended active duty as a supply specialist in April 2008. Currently in the Army Reserve.

CERTIFICATIONS: A+ and Network+; working on Server+; plans to get Security+.

WHY CREATING FUTURES? "In 2004, I tried to get my degree in electrical engineering but was unable to complete it. I'm now working toward an associate's degree in IT through Kaplan University's online program. When I heard about the Creating Futures program, I decided to back up my degree with these certifications, figuring both will look good on my résumé."

WHAT HE LIKES ABOUT THE PROGRAM: "Mentoring is built into the training. For instance, when you complete a section, you e-mail your answers to a mentor, and he'll say whether you were right or wrong and what you should do differently."

CURRENT EMPLOYMENT: "Mostly freelance, driving from site to site to do computer repairs. I'm also working as a security guard."

WHAT HE'S FINDING IN THE JOB MARKET: "They're looking for people with managerial experience, not entry-level. Employers say it's great that I have certifications, but they're looking for someone with a degree."

OUTLOOK: "I'm not discouraged. Once I've got everything in order, I plan to move out of state. One of the main reasons I chose this career field is that technology will always be here."

TROY HEDRICK

Lansdale, Pa.

SERVICE: 14 years in the U.S. Navy. Left with a physical disability.

CERTIFICATIONS: A+ and Network+.

WHY CREATING FUTURES? "In the Navy, I got interested in computers, and I'd owned one since 1989. So when I left, I got my associate's degree in networking through a [Veterans Affairs] vocational retraining program. I worked a lot of

unemployment rate is 11.2% among veterans of the wars in Iraq and Afghanistan age 18 and older, compared with a rate of 8.8% for nonveterans in the same age group. Some reports say soldiers are re-enlisting specifically because of the poor civilian job market.

The lesson for military personnel is to "make sure you have a marketable skill," says Joyce Gioia, a management consultant. Creating Futures is certainly trying to help them do that, but the question is whether that battle can be won, especially during the current economic downturn.

Venator acknowledges that the program is already "working against the odds" in its commitment to helping people traditionally underrepresented in IT. Of all the people who enroll in the program, about 40% go on to earn a certification, and Venator is working to raise that number. One way is through a newly added prescreening step in which CompTIA attempts to determine whether an individual has the right background, motivation and computer skills to obtain a certification. The foundation also provides free computer literacy courses for veterans who don't have a computer background.

Venator says Creating Futures is different from other training programs in that it offers a complete package of services. In addition to prescreenings, the program includes mentoring and allows participants to take practice tests before the actual certification exams.

Creating Futures also provides job placement assistance, but only about 40% of participants have gotten jobs since 2007, Venator says. He acknowledges that that percentage reflects today's economy and says the job placement success rate is higher for people who obtain the two higher-end certifications, Security+ and Network+. "The A+ certification used to be golden for help desk and internal support positions," Venator says. "But a number of companies are on hiring freezes or have downscaled." Of the four veterans interviewed for this article, all have found some IT-related work (see profiles below).

To help Creating Futures participants find jobs, the foundation works with placement firms such as Robert Half Technology and Bender Consulting Services Inc. The foundation interviews South Carolina veterans through Fast Forward, a Columbia, S.C.-based organization that provides technology education and access to people who have been underserved through traditional programs. It also works to match participants with openings for internships and entry-level jobs at CompTIA member companies such as Citibank, Procter & Gamble, Colgate-Palmolive, Disney and Barclays Bank. "We can't guarantee a hire for the participant, but at least we can get them connected with members and their HR departments," says Lisa Fasold, the foundation's communications director.

Dave Willmer, executive director of Robert Half Technology and a *Computerworld.com* columnist, concurs. Two of CompTIA's certifications in particular help people master skills that are in demand, he says. "Our clients in general are seeking professionals with strong networking and security skills," he notes.

Veterans will also have an advantage if they have security clearance. "The combination of security skills and clearance is huge," Willmer says. At the same time, "we don't want to sugarcoat it; it's tough times out there," he says. "It's highly competitive, and while certifications don't take the place of on-the-job experience, if you have certification in an area of demand, it's definitely a leg up."

Although Adams got his start in computing before obtaining certification, he credits the CompTIA program with solidifying his career. Without that opportunity, he says, "I most likely would have been working at Wal-Mart." ■

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*

contract jobs, but I never quite got a full-time job because I wasn't certified. I found out about the Creating Futures program on CompTIA's Web site and saw I was qualified because I left the Navy with a disability."

CURRENT EMPLOYMENT: "I'm working down in Philadelphia doing a short-term project for a company, cleaning out their network closet, diagramming the network, doing some documentation. It pays the bills."

WHAT HE'S FINDING IN THE JOB MARKET: "The certification has actually opened doors. I've been able to get job interviews that I wouldn't have been qualified for without A+, even though I have six years of experience doing IT work. The more people you can interview with, the better the chances you have of getting a job."

WHAT HE LIKES ABOUT THE PROGRAM: "The tests alone are $300, so to be able to take them free of charge is awesome. They even give practice tests for free, which aren't cheap to buy."

GRAHM DONOVAN

Lebanon, Ohio

SERVICE: Joined the Army after high school and served from 1989 to 1993.

WHY CREATING FUTURES? "When I came out of the Army, I really struggled with what to do next. I worked a lot of customer service jobs, including at a hotel, a video store and an insurance agency. I was always interested in computers but didn't know how to get into it, including how to get certified. In 2007, I was doing some administrative temp work, and I subscribed to an e-mail newsletter that CompTIA offered, and I saw they offered free training for vets. I applied that same day. It was the perfect opportunity for me."

CERTIFICATIONS: A+ and Network+; studying for Security+.

CURRENT EMPLOYMENT: "I got a job as a project analyst in November 2008 at TEKsystems in Cincinnati. I'm managing projects related to GPS systems and RFID tags. After I got my Network+ certification, I had more confidence to go out and get a job related to IT. The certifications don't apply specifically to the job, but knowing I had a good understanding of the technology was a leg up."

WHAT HE LIKES ABOUT THE PROGRAM: "The online training walks you through the steps, and you can go back and forth as you need to. The drawback is for people who aren't self-motivated, because you definitely have to do all the training on your own. There's an online mentor available, but it's still very much self-directed. If people are not completely dedicated to doing it, it's easy to not do it."

OUTLOOK: "You always have to keep an eye on the future. I'm looking to take some of the other certifications and see where that takes me."

CHECKING OUT USED GEAR

GETTY IMAGES / BARROS & BARROS

Buying used IT hardware can save big bucks. Here's how to kick the tires. By Julie Sartain

WHEN Cox Ohio Media needed to buy 600 laptops, it decided to buy used gear — and saved about 70% of the cost of going with new units.

Brand-new laptops would have cost about $600,000, says Catherine Bates, asset and configuration manager at Cox Enterprises Inc., the parent company of Cox Ohio in Dayton. But Cox saved about $420,000 by purchasing used Dell systems from Redemtech Inc. in Columbus, Ohio.

Cox is rolling out the laptops in the early stage of what's planned to be a yearlong implementation. The Dell machines are less than two years old, and so far everything is working well, Bates says.

Continued on page 30

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BUSINESS RISK LEADERSHIP

"Our best advice, is to treat used or refurbished IT equipment like a used-car purchase – kick the tires and get the dealer to pony up for an extended warranty.

STEVE BRASEN, ANALYST, ENTERPRISE MANAGEMENT ASSOCIATES INC.

Continued from page 28

"One of the benefits Redemtech offers is the diagnostic and grading process that they put their equipment through," Bates says. "We knew we were getting grade-A machines, which means that there are no hardware defects or cosmetic issues with the equipment. The equipment functions just as if we had purchased it new."

The laptops included a 90-day warranty, she says. This is on par with what some new laptops come with, though there are exceptions. New Dell Vostro laptops, for instance, have limited warranties of up to a year, but other Dell hardware warranties vary in length from 90 days to four years. Hewlett-Packard Co.'s Mini 1000 XP laptop comes with a one-year warranty.

Cox Ohio is by no means alone in considering used IT equipment instead of buying new, and a number of companies are taking the lead in servicing this growth market. HP's Renew program and companies like Redemtech, Canvas Systems LLC and Frontier Computer Corp. typically buy used equipment from user organizations that are refreshing their systems. The vendors then perform diagnostics, grade the gear and offer it to buyers at a much lower price than what it would cost new. Sometimes these vendors even get their hands on IT equipment that was returned but never used by customers who ordered incorrectly or decided to go another route.

Forrester Research Inc. analyst Doug Washburn says that IT buyers should consider the different flavors of used equipment, since performance and cost will likely vary. "Remanufactured," "refurbished" and "reconditioned" are terms that "refer to a device that goes through a stringent visual and technical refurbishment process," he says. In contrast, a machine that's just described as "used" isn't guaranteed to have gone through that process.

Washburn explains that in this economy, when capital expenditure dollars are hard to come by, organizations are looking to preserve funds wherever they can. Plus, the reuse option does double-duty by fulfilling "green IT" goals, which are increasingly part of the agendas at many companies, he says.

Washburn doesn't have hard data about the number of customers buying used vs. new, but he says demand for refabbed gear is high enough that supply is starting to become an issue.

QUICK TIPS

Before buying used hardware, make sure of the following:

- Replacement parts and support are available.
- You get a warranty.
- The hard drive is cleaned of any previous owner's data.
- You investigate the vendor.
- You compare the difference in costs between refurbished and new, then weigh the risks based on the actual savings.

"People are extending the life cycle of their assets and are not refreshing as quickly" to conserve capital dollars, so there are fewer used machines on the market, he explains.

BIG SERVERS, TOO

Laptops aren't the only equipment that companies are looking at buying used. Duc Tran, manager of the Vertical Motion Simulator Lab at NASA, says he has bought used computers that are compatible with other lab systems that are no longer available new.

Specifically, NASA has purchased used DEC AlphaServer ES45s to upgrade and to continue supporting the lab's existing DEC servers.

If the used equipment weren't available, his group would have to spend time and money developing a new system, Tran says, noting that such an endeavor "would be fairly expensive."

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Forrester's Washburn adds that the performance of used gear isn't necessarily any different than that of new systems. For example, he says, HP's Renew program remanufactures equipment to be in "same as new" condition and touts equal performance at a 15% to 40% discount compared to new. And in fact, the refabbed equipment may have never actually been used because of customer returns, canceled orders and the like.

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CAVEAT EMPTOR

But the strategy is not without risk. Steve Brasen, an analyst at Enterprise Management Associates Inc. in Boulder, Colo., says the primary challenges of using refurbished equipment are ensuring reliability and dealing with technology obsolescence.

"Any piece of hardware that was actively used previously is going to show signs of wear," Brasen says. "Even 'refurbished' units, which have typically had replaced or repaired damaged components, have been subjected to stress and therefore contain unseen wear."

He adds that even though there's "no question" that used equipment is less expensive, he recommends that companies still follow their standard decision-making processes before making a purchase.

"Any hardware evaluation [for either new or used equipment] should factor in the total life-cycle cost with the expected return on investment," Brasen suggests.

Servers and desktop computers can be expected to have a usable life span of only about three to six years, he says. After that, they become difficult to support as they are replaced by the next generation of systems architectures. Telephony and network systems have a longer shelf life, but customers should always ensure that replacement parts and support are available before committing to older technology.

If you're buying directly from the previous user and not going through a refurbishing company, you should take the same steps upon receiving the new equipment that you would take if you were disposing of hardware, namely performing a secure wipe of the hard disk and removing any external media (CDs, DVDs and so on). There are a number of commercial and open-source utilities available for wiping a hard drive, including Iolo Technologies LLC's DriveScrubber, Skylark Utilities' Wipe It 3.01, and The Mireth Technology Corp.'s ShredIt 5.0

Despite these cautions, "the pros far outweigh the cons," says William Sauter, IT director at Beaver Island Community School in Beaver Island, Mich. "The only con that comes to mind [is] the lack of documentation in the box and the mounting accessories." But those challenges can be overcome by working with a top-notch used-gear supplier, Sauter adds.

He has primarily purchased used HP/Compaq gear, including an HP MSL5000 tape library, four ProCurve Gigabit Ethernet switches and a disk-to-disk backup system that includes a ProLiant DL360. All of this gear was purchased for less than the cost of Beaver Island's current tape library, Sauter says. The switches carry a lifetime next-day replacement warranty from HP, even though Sauter bought the switches from Frontier Computer.

Among the suggestions from Forrester's Washburn: Ensure that the products you're purchasing have warranties that last as long as possible — at least 120 days — with free parts and labor included from in-house technicians. "And before entering into a new sourcing relationship, check with your existing vendors, since they might already sell used equipment. For example, HP and Dell both offer used options," Washburn says.

"Our best advice," says Brasen, "is to treat used or refurbished IT equipment like a used-car purchase — kick the tires and get the dealer to pony up for an extended warranty. Value in purchasing this equipment can be achieved, but only if you're certain that you're not going to get stuck with a lemon." ■

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STEVE BRASEN, ANALYST, ENTERPRISE MANAGEMENT ASSOCIATES INC.

Continued from page 28

"One of the benefits Redemtech offers is the diagnostic and grading process that they put their equipment through," Bates says. "We knew we were getting grade-A machines, which means that there are no hardware defects or cosmetic issues with the equipment. The equipment functions just as if we had purchased it new."

The laptops included a 90-day warranty, she says. This is on par with what some new laptops come with, though there are exceptions. New Dell Vostro laptops, for instance, have limited warranties of up to a year, but other Dell hardware warranties vary in length from 90 days to four years. Hewlett-Packard Co.'s Mini 1000 XP laptop comes with a one-year warranty.

Cox Ohio is by no means alone in considering used IT equipment instead of buying new, and a number of companies are taking the lead in servicing this growth market. HP's Renew program and companies like Redemtech, Canvas Systems LLC and Frontier Computer Corp. typically buy used equipment from user organizations that are refreshing their systems. The vendors then perform diagnostics, grade the gear and offer it to buyers at a much lower price than what it would cost new. Sometimes these vendors even get their hands on IT equipment that was returned but never used by customers who ordered incorrectly or decided to go another route.

Forrester Research Inc. analyst Doug Washburn says that IT buyers should consider the different flavors of used equipment, since performance and cost will likely vary. "Remanufactured," "refurbished" and "reconditioned" are terms that "refer to a device that goes through a stringent visual and technical refurbishment process," he says. In contrast, a machine that's just described as "used" isn't guaranteed to have gone through that process.

Washburn explains that in this economy, when capital expenditure dollars are hard to come by, organizations are looking to preserve funds wherever they can. Plus, the reuse option does double-duty by fulfilling "green IT" goals, which are increasingly part of the agendas at many companies, he says.

Washburn doesn't have hard data about the number of customers buying used vs. new, but he says demand for refabbed gear is high enough that supply is starting to become an issue.

QUICK TIPS

Before buying used hardware, make sure of the following:

- Replacement parts and support are available.
- You get a warranty.
- The hard drive is cleaned of any previous owner's data.
- You investigate the vendor.
- You compare the difference in costs between refurbished and new, then weigh the risks based on the actual savings.

"People are extending the life cycle of their assets and are not refreshing as quickly" to conserve capital dollars, so there are fewer used machines on the market, he explains.

BIG SERVERS, TOO

Laptops aren't the only equipment that companies are looking at buying used. Duc Tran, manager of the Vertical Motion Simulator Lab at NASA, says he has bought used computers that are compatible with other lab systems that are no longer available new.

Specifically, NASA has purchased used DEC AlphaServer ES45s to upgrade and to continue supporting the lab's existing DEC servers.

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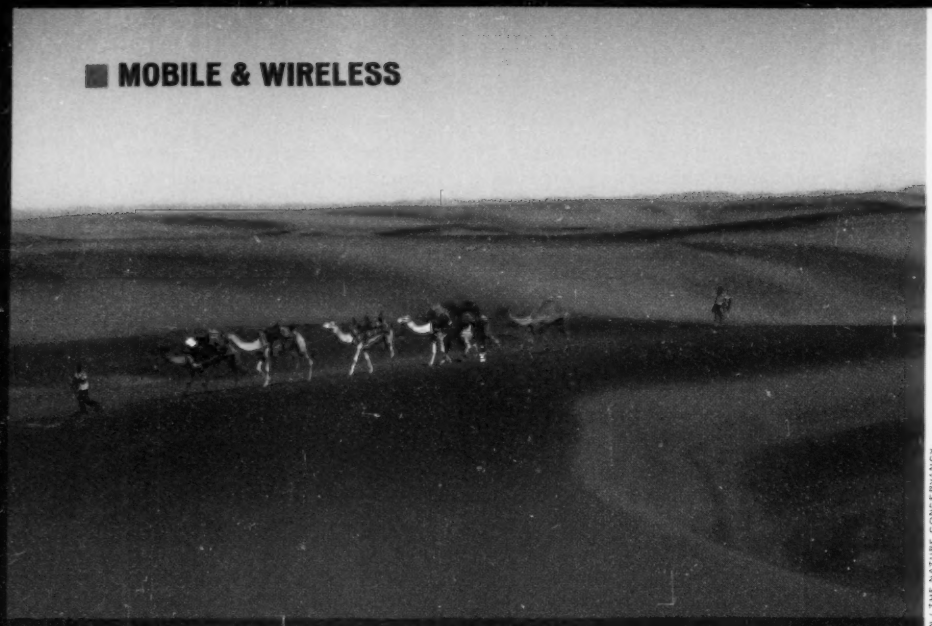

THE NATURE CONSERVANCY recently equipped scientists with solar-powered notebooks for a trip across Africa's Namib Desert.

SANJAYAN, THE NATURE CONSERVANCY

Nonprofits Share Tech Expertise

Cutting-edge IT applications include a solar-powered MacBook for a trek across the desert. By Nancy Gohring

CASH-STRAPPED nonprofits may not be the first place you'd look for advanced IT applications, but it turns out that some nonprofits are out on technology's cutting edge.

The Nature Conservancy, for example, recently equipped a couple of scientists with solar-powered notebook PCs for a trip across Africa's Namib Desert on foot. "We draped solar panels on the back of a camel, [and] gave [the scientists] a light notebook with low power requirements and digital cameras," says Jean-Louis Écochard, CIO at the Arlington, Va.-based environmental organization.

"Throughout the journey, they could upload images of biodiversity, rhino habitat," says Écochard. "They could keep in touch and write a blog." Incidentally, he adds, at one point a camel took off carrying a MacBook, resulting in a chase that lasted several hours.

Écochard told his tale at a recent meeting of NetHope LLC, a nonprofit IT consortium of 26 large nongovernmental organizations (NGO) that get together twice yearly to share tips on how they're using technology. Last month, they met at Microsoft Corp.'s campus in Redmond, Wash.

The way NGOs like The Nature Conservancy use technology is a bit like the off-label use of medicine, when doctors prescribe drugs for ailments other than what they were designed to address. "This is off-label technology," Écochard says. "We're bending it in a way that makes it work in a place to suit our purposes."

Scientists at The Nature Conservancy use high-end cameras attached to helicopters to snap detailed photos of foliage in Hawaii in order to identify where invasive weeds are growing. Windows CE-based handheld devices, most often used in manufacturing or urban business deployments, aid scientists measuring changes in remote grasslands.

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Microsoft plans to donate $2.4 million worth of its SharePoint collaboration software to The Nature Conservancy to help the organization connect scientists and other workers in 700 offices and 30 countries around the world.

Off-the-shelf software doesn't always fit the special needs of nonprofits though, and it can be too expensive. So some NGOs are developing their own systems, often based on open-source software, that are more affordable.

For instance, Peter Bladin, founding director of the Grameen Foundation's technology center in Seattle, is working to develop open-source software called Mifos, which is specifically designed for the operations of microfinance organizations. "The beauty is anybody with technical skills can have access to the source code and enhance it," he says.

The IT budgets of most big NGOs are half the size of the IT budgets of their counterparts in the commercial world, says Bill Brindley, CEO and executive director of NetHope, which is based in McLean, Va. "If they can get help from their brothers and sisters in NetHope," he says, "they can build capacity with limited budgets that they otherwise wouldn't be able to do." ■

Gohring *writes for the IDG News Service.*

Emulation or Virtualization?

Don't be confused! Virtualization and emulation aren't the same. Here's how they differ. By Russell Kay

EMULATION IS what we do when we try to make one system behave like or imitate a different system. We want to take System A (something we already have) and give it the inputs we would normally use for System B (which we may not have) and have System A produce the same results as System B.

What's involved is more than a simple translation of commands or machine instructions; compilers and interpreters have done that for years. No, we're taking complete operating systems, APIs and functions, and we're having them work on a machine they were never designed for — a machine that may use totally different methods and commands. That this is even possible is sometimes miraculous, but it nearly always carries a high performance price. Emulation entails a high overhead, and it significantly reduces throughput.

If emulation takes such a toll, why bother? Because we might want to do one of the following:

- Run an OS on a hardware platform for which it was not designed.
- Run an application on a device other than the one it was developed for (e.g., run a Windows program on a Mac).
- Read data that was written onto storage media by a device we no longer have or that no longer works.

Emulation is important in fighting obsolescence and keeping data available. Emulation lets us model older hardware and software and re-create them using current technology. Emulation lets us use a current platform to access an older application, operating system or data while the older software still thinks it's running in its original environment.

The term *emulator* was coined at IBM in 1957. Before 1980, it referred only to hardware; the term *simulation* was preferred when talking of software. For example, a computer built specifically to run programs designed for a different architecture would be called an emulator, whereas we'd use the word *simulator* to describe a PC program that lets us run an older program (designed for a different platform) on a modern machine. Today *emulation* refers to both hardware and software.

VIRTUALIZATION

Virtualization is a technique for using computing resources and devices in a completely functional manner regardless of their physical layout or location. This includes splitting a single physical computer into multiple "virtual" servers, making it appear as though each virtual machine is running on its own dedicated hardware and allowing each to be rebooted independently. In storage virtualization, on the other hand, the server regards multiple physical devices as a single logical unit.

A virtual server is a carefully isolated software "container" with its own software-based CPU, RAM, hard disk and network connection. An operating system or application — even the virtual server itself, or other computers on the same network — can't tell the difference between a virtual machine and a physical machine.

Virtual machines offer the following advantages:

- They're compatible with all Intel x86 computers.
- They're isolated from one another, just as if they were physically separate.
- Each is a complete, encapsulated computing environment.
- They're essentially independent of the underlying hardware.
- They're created using existing hardware.

IBM developed virtualization in the 1960s so big, expensive mainframes could run multiple applications and processes concurrently. During the 1980s and '90s, virtualization was largely abandoned in favor of client/server applications and distributed computing. Today's servers and PCs, however, face many of the same underutilization problems as those 1960s mainframes.

VMware Inc. invented virtualization for the x86 platform in the late 1990s. Recently it introduced a product, called Fusion, that lets Windows applications run concurrently on Macintosh computers that use OS X. ■

Kay *is a* Computerworld *contributing writer in Worcester, Mass. You can contact him at russkay@charter.net.*

Definition

Virtualization **is a buzzword applied to many different technologies: servers, storage, communications, networks. An older, seemingly related term is *emulation*, but it's not the same thing. Here, we'll sort out the differences.**

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Wine: Is It An Emulator Or Not?

Sometimes the concept of emulation is blurred. A popular open-source program called Wine lets Windows programs run on Unix-like operating systems such as Linux, Mac OS X and FreeBSD. The name is a reflexive acronym derived from the phrase Wine Is Not an Emulator. Or is it? The Wine FAQ (at *http://wiki.winehq.org/FAQ*) gives the following explanation:

"When users think of an emulator, they tend to think of things like game console emulators or virtualization software. This is the wrong way to think about Wine – Wine runs Windows applications in essentially the same way Windows does. Because Wine is just a native Unix substitute for the components of Windows, there is no inherent loss of speed due to 'emulation' when using Wine. . . . Wine [is] a Windows emulator in much the same way that Windows Vista [is] a Windows XP emulator."

– RUSSELL KAY

We've Been Blind to Attacks on Our Sites

A newly installed firewall **uncovers site scraping by competitors.** And who knows **how long** this has been going on?

Trouble Ticket

AT ISSUE: Web scraping and other attacks against the company's Web sites have been going on.

ACTION PLAN: Better security measures are needed. And certainly it pays to be informed.

OUR WEB sites are under attack! And my company's firewall and intrusion-detection systems seem to have been giving a lot of people around here a false sense of security.

Of course, as the security manager, I can't afford a false sense of security, so I recently took some steps to find out just what was going on within our Web servers' network traffic. And it turns out that many attacks have been getting through our firewalls undetected. We'll never know how long this has been going on.

It isn't always easy to know just how effective our security measures are. We are always guessing what threats are facing us and where they're coming from, but we can't always know how accurate those guesses are and what we might be overlooking.

My company's front-end Web servers, which directly receive connections from the Internet through our firewalls, are definitely a hot spot in our network. The firewalls and IDS allow us to see some of what's going on, but can they really detect active content-based attacks? To find out, I installed a Web application firewall in my company's DMZ to tell us about active attacks that may not be identified by our other devices. I set the device up in monitor mode, though it can be set up to block attacks, because my goal was just to see what was going on. I wanted to know more about what's inside the connections to those Web servers.

What I discovered is that our Web sites are being "scraped" by other companies — our competitors! Some of the information on our sites is valuable intellectual property. It is provided online, in a restricted manner (passwords and such), to our customers. Such restrictions aren't very difficult to overcome for the Web crawlers that our competitors are using, because webmasters usually don't know much about security. They make a token attempt to put passwords and restrictions on sensitive files, but they often don't do a very good job.

■ It isn't always easy to know just how effective our security measures are.

WHAT TO DO

Evidence in hand, I went to see our CIO. Our legal department is now considering what action to take, although it sounds as if legal action might be deemed too difficult and expensive, given our economic straits. But it is clear that our Web developers need to do a better job of blocking access to sensitive information. We're examining the nature of the problem to determine how things could be done better. Everyone is pulling together to help fix the issue, and that gives me a real sense of satisfaction.

Our Web application firewall found some other problems as well. We experience hundreds of SQL injection attack attempts every day. So far, none has been successful, but I'm amazed at the sheer volume. I can't imagine anyone having the time to sit around trying SQL injection attacks against random Web servers, so I have to assume that these attacks are coming from automated scripts. In any case, they are textbook examples of SQL injection, each one walking through various combinations of SQL code embedded in HTML. It looks like we've done a good job of securing our Web applications against these attacks, but it's always a little disconcerting to hear invaders pounding on the door.

We're also seeing a smattering of other content-based attacks, but none of them appears to be getting through our defenses. Still, it makes me better appreciate the dangers of relying solely on port-based firewall rules that are not application-aware and on signature-based intrusion-detection systems that are blind to certain types of malicious traffic. As my recent exercise has shown, it's hard to defend against problems you don't know about. ■

This week's journal is written by a real security manager, ***"J.F. Rice,"*** *whose name and employer have been disguised for obvious reasons. Contact him at jf.rice@engineer.com.*

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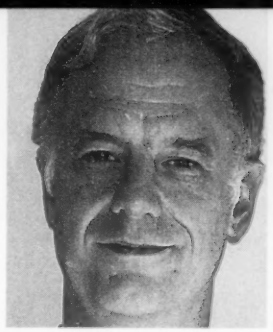
■ OPINION

Bart Perkins

The Benefits of Working Together



IN DIFFICULT ECONOMIC TIMES, every company seeks cost reductions and process improvements. But now an entire industry has banded together to help its constituents maximize their IT-based assets. By developing an industry architecture (IA), the hotel industry hopes to provide the entire sector with the same types of advantages an enterprise architecture offers a corporation.

An IA seeks to remove inefficiency, facilitate communication and enable customer service improvements. But can an IA deliver tangible benefits? The hotel industry consortium recently approved Phase I of its IA. Its aims include the following:

Improve supplier products. The IA clearly describes products and services needed by hoteliers. A clear architectural road map allows suppliers to focus efforts on the capabilities most important to customers. As a result, suppliers can improve product offerings and reduce development costs.

Improve architectural coverage. Since an IA facilitates the mapping of IT products to internal business processes (and associated applications), hoteliers can more easily identify how particular software packages support their operations. It also lets them identify gaps in their architectures and make apples-to-apples comparisons between products.

Enable global operations. Standardization enables an IA-compliant product to operate across regions without compromising architectural integrity. Standardized interfaces allow hoteliers to integrate regional products required to meet guests' cultural expectations, respond to local government regulations and support differences in language, alphabet, currency, etc.

Reduce training requirements. Standardization of core business processes across the industry reduces training requirements.

■ An entire industry has banded together to maximize IT-based assets.

Improve agility. An IA reduces the time its takes to install IT in a new hotel. It also allows IT products and services to be reconfigured rapidly in the face of consumer demand, new regulations or new business opportunities. In addition, the IA facilitates the planning and monitoring of architectural changes in companies that manage multiple hotel brands.

Increase buyer confidence. Buying IT products is difficult; features are hard to compare, documentation is often inaccurate or inadequate, and applications may not interface properly with existing software. A hotel industry consortium, HTNG, will provide an IA product certification program. Certification increases buyers' confidence that a product meets IA guidelines and interacts properly with other IA-compliant products.

Improve security. Security standards are part of an industry architecture. The hotel industry's IA incorporates security standards from the World Wide Web Consortium, The Open Group and the PCI Security Standards Council. Hotels complying with these standards are much more secure than those using homegrown (and sometimes conflicting) security approaches.

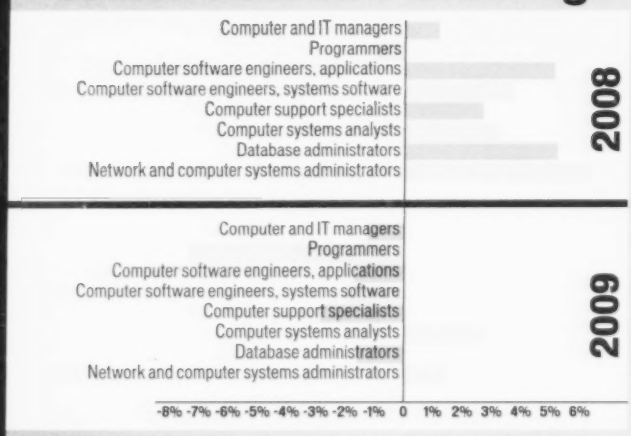
Lower IT costs. An IA facilitates component reuse, standardized interfaces, centralized software management, and version control. These practices lower both acquisition costs and ongoing operating costs.

Developing an industry architecture is far more difficult and resource-intensive than building an enterprise architecture. But the hotel industry anticipates achieving diverse and significant benefits in return. The IA enables companies to simultaneously reduce costs, improve efficiency and increase customer service. Moreover, the benefits affect all industry participants, including hotel owners, suppliers, employees, customers and investors. Could your industry profit from an IA? The benefits certainly warrant consideration. ■

Bart Perkins *is managing partner at Louisville, Ky.-based Leverage Partners Inc., which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.*

Career Watch

Which Jobs Are Growing?



SOURCE: FORRESTER RESEARCH INC. REPORT "DON'T PANIC! THE IT JOBS PICTURE ISN'T AS BAD AS YOU THINK," BY SIMON YATES, MARCH 2009. PROJECTIONS BASED IN PART ON U.S. BUREAU OF LABOR STATISTICS FIGURES FOR THE YEARS 1999-2007.

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THE JOB HUNT
Reading All About It

THE LIBRARY JOURNAL asked library book supplier Baker & Taylor Inc. which job-hunting titles were most in demand in the six months prior to March 14, 2009. Here are the top 10:

- **What Color Is Your Parachute? 2009: A Practical Manual for Job-Hunters and Career-Changers,** by Richard Nelson Bolles
- **Knock 'em Dead Résumés, 8th ed.,** by Martin Yate
- **Next-Day Job Interview: Prepare Tonight and Get the Job Tomorrow,** by Michael Farr and Dick Gaither
- **150 Best Recession-Proof Jobs,** by Laurence Shatkin
- **Knock 'em Dead 2009: The Ultimate Job Search Guide,** by Martin Yate
- **Cover Letters That Knock 'em Dead, 8th ed.,** by Martin Yate
- **100 Fastest-Growing Careers: Your Complete Guidebook to Major Jobs With the Most Growth and Openings,** by Michael Farr
- **Top 100 Careers Without a Four-Year Degree: Your Complete Guidebook to Major Jobs in Many Fields,** by Michael Farr
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- **Best Jobs for the 21st Century,** by Michael Farr and Laurence Shatkin

PAGE COMPILED BY JAMIE ECKLE.

TO THE CLASS OF 2009: GOOD LUCK!

This year's graduates seem well aware that they face a challenging career landscape, with companies much more likely to be making job cuts than hiring. Some quantification is lent to that perception by CareerBuilder's Annual College Job Forecast survey, conducted online in the first quarter of this year among 2,543 hiring managers and human resources professionals. Here are some of the numbers:

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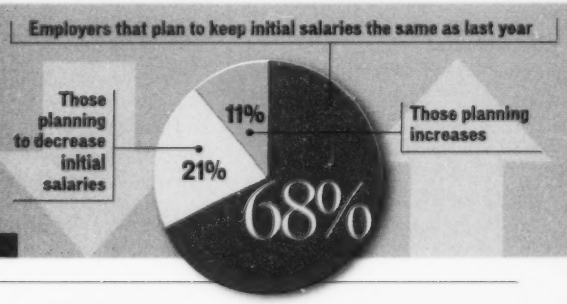
43% Employers planning to hire recent college graduates (down from 56% in 2008)

CAREERBUILDER NOTES that there are opportunities, even in this economy, and one of the most important things for setting one applicant apart from the rest is relevant experience. That isn't restricted to professional work experience. In fact, employers surveyed said that the following activities would be considered pertinent work experience for recent college graduates to include on their résumés:

- **Internships**
- **Part-time jobs in other areas or fields**
- **Volunteer work**
- **Involvement in school organizations**
- **Class work**
- **Involvement in managing activities for sororities or fraternities**
- **Participation in sports**

And when asked to list the worst mistakes recent college graduates make during the application and interview process, the hiring managers and HR pros cited the following:

- **Acting bored or cocky: 63%**
- **Not dressing appropriately: 61%**
- **Coming to the interview with no knowledge of the company: 58%**
- **Not turning off electronic devices: 50%**
- **Not asking good questions: 49%**
- **Asking about the pay too early in the process: 38%**
- **Spamming employers with a résumé and cover letter: 21%**
- **Failing to remove unprofessional photos or content on social networking sites and other Web pages: 19%**
- **Not sending a thank-you note after the interview: 12%**


Employers that plan to keep initial salaries the same as last year
Those planning to decrease initial salaries
11%
21%
68%
Those planning increases

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Shark Tank

TRUE TALES OF IT LIFE AS TOLD TO SHARKY

IT the Hard Way

A server has gotten flaky, and it's still under a support contract, so this pilot fish calls the vendor. "Please, tell me the express support code on the front," says vendor tech. Fish reads off the number. "That server is in our warehouse," tech says. No, says fish, I can assure you that it's in my rack. Let's check again. Tech double-checks. "Our records show a refund was issued for that server 15 months ago," he says. "You used that refund to purchase a more powerful server and were supposed to ship that one back." Fish does a little quick math: That's about when the then-sysadmin left the company. Sighs fish, "He never bothered to process the return of the server. When I arrived seven months ago, it was racked and ready to go. Tech support said they can't help without a contract, and I had a dead server and people above me with lots of questions. We got a new server ordered right away – and this time we are going to own it."

The Easy Way

Remote users are griping that one of this company's applications runs very slowly on the wide-area network, so a tech is dispatched to check out the problem. "He reported back that the slowness was due to conditional drop-down menus – what you choose on a particular drop-down will determine what you get to pick from on the next drop-down menu," says a pilot fish there. "These conditional menus went four or five layers deep, and every time you selected an item from one menu, a pop-up notifier stating 'Please wait' would show up." Fish reports the problem to the app's developers – who remove the 'Please wait' notice. Result: "The menu system was still the same," fish says. "Just removing the notice that some processing was happening in the background eliminated the complaints!"

The Obvious Way

This pilot fish runs the IT department at a relatively small professional firm. Translation: Fish is responsible for anything with wires, including computers, servers, the Internet, switches, phones and the public-address system. "One afternoon, I received a phone call from the head of our office, who is a partner in the company," fish says. "One of the other partners has complained that a client told him that our 800 phone number isn't working. I told him, 'I'll call you right back.' I hung up the phone, picked up my cell phone, called our 800 number and got our receptionist. Receptionist put me through to the head of our office. 'I just checked,' I said. 'Our 800 number is working.' I'm always happy when I can put all my education, training and technical experience to work on a difficult problem."

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Page number refers to page on which story begins. Company names can also be searched at computerworld.com

3Com Corp. 12
Ace Hardware Corp. 40
Advanced Micro Devices Inc. 5
Aerospace Research Institute of Iran 5
Allied Building Products Corp. 19
Amazon.com Inc. 23
Armed Forces Communications and Electronics Association 5
Aruba Networks Inc. 12
Baker & Taylor Inc. 36
Barclays Bank PLC 24
Bender Consulting Services Inc. 24
Bull 10
CareerBuilder 36
Chiquita Brands International Inc. 23
Cisco Systems Inc. 12, 14
Citibank NA 24
CMIT Solutions of Central Rhode Island 15
Colgate-Palmolive Co. 24
CompTIA Educational Foundation 24
Computing Technology Industry Association 24
CPS Energy 19
Deal Architect Inc. 22
El Al Israel Airlines Ltd. 8
Facebook Inc. 23
Fast Forward 24
Forrester Research Inc. 22, 36
GAF Materials Corp. 23
Gartner Inc. 8, 14, 22
Geek Squad 22
Google Inc. 23
Grameen Foundation 32
Granby High School 24
Harrisburg University of Science and Technology 5
Hassler Communication Systems Technology Inc. 15
Heartland Payment Systems Inc. 8
IBM 8, 33
Infonetics Research 15
Intel Corp. 10, 33
Iranian High Performance Computing Research Center 5
Javelin Strategy and Research 8
Juniper Networks Inc. 14
Kaplan University 24
Leverage Partners Inc. 35
Linux Foundation 15
Los Alamos National Laboratory 10
Major League Baseball 24
McCormick Foundation 24
Microsoft Corp. 8, 10, 12, 23, 32
Microsoft Startup Accelerator 8
MIPS Technologies Inc. 10
Mozilla Foundation 8
MySpace Inc. 10
NetHope LLC 32
New Mexico Computing Application Center 10
Opera Software ASA 10
Oracle Corp. 5, 22
Payments Processing Information Sharing Council 8
PCI Security Standards Council 35
Quinnipiac University 12
Red Hat Inc. 5, 10
RedMonk 8
Robert Half Technology 24
Sandia National Laboratories 10
SAP AG 19
Silicon Graphics Inc. 10
Skype 22
Symantec Corp 8
TEKsystems Inc. 24
The Nature Conservancy 32
The Open Group 35
The Procter & Gamble Co. 24
The Walt Disney Co. 24
Twitter Inc. 5
U.S. Army 24
U.S. Army Reserve 24
U.S. Bureau of Labor Statistics 24
U.S. Census Bureau 10
U.S. Defense Information Systems Agency 22
U.S. Department of Defense 22
U.S. Department of State 5
U.S. Department of Veterans Affairs 24
U.S. Navy 24
University of Florida 14
VMware Inc. 8, 33
Vyatta Inc. 14
Wisconsin Project on Nuclear Arms Control 5
World Wide Web Consortium 35
Xorp Inc. 15
Yankee Group Research Inc. 12

ADVERTISERS INDEX

BI Perspectives Best Practices in BI C3
biperspectives.com/awards.aspx
CIO Executive Council Ones to Watch 25
cio.com/otw
Digital ID World 29
digitalidworld.com
Hewlett-Packard C4
hp.com/go/G6superstar6
IBM Express Seller 13
ibm.com/systems/knowyourenergy
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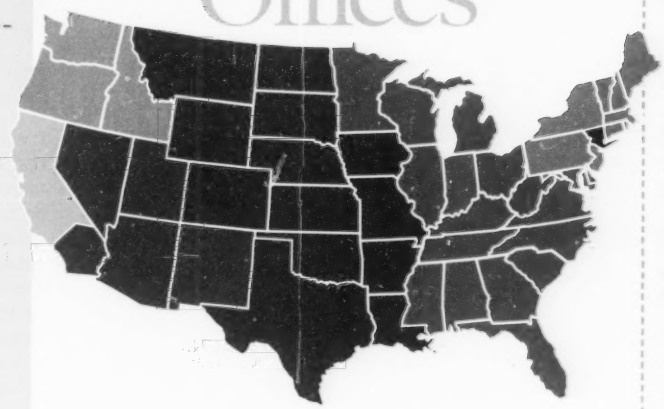

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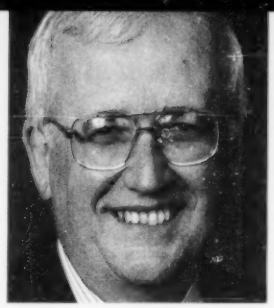
Paul M. Ingevaldson

Dazzle Your CEO With Hard Facts



WHEN THE CEO asks the CIO, "What is the value of IT?" the answer is usually something like, "We keep the company running," "We automate most of the functions of the company," "We contribute to the company's efficiency," or "We improve sales." Then the CIO comments about the various systems that do all of those things.

Wouldn't it be great if the CIO could answer that question like this: "Over the past five years, the major systems developed by IT have delivered a total return on investment of 39% while increasing our costs by only 5%." Now, that's what a CEO wants to hear, not some self-aggrandizing spin that can't be quantified.

There are at least three reasons why this is not routinely done in companies today. Here they are:

■ **First of all, an ROI study must be done at least a year after the system has been implemented.** This is necessary in order to have enough time to identify the true savings and costs. The people who worked on the project would be well suited to doing such a study, but both the user department and IT would have a hard time tracking them down in order to put them to work on that task. They will have moved on to more time-critical work, or they may have left the company.

■ **Second, the work on the ROI study must be done within the user department,** since that is where the savings are realized. But the user department is probably not interested in committing more resources to the project just to help IT prove its value to the company.

■ **Finally, the savings may include head count reductions.** If the user department has either redeployed or terminated the people who worked on the project, an ROI study could cause embarrassment or, at minimum, require some explanation.

■ Your CEO wants to hear real ROI numbers, not some self-aggrandizing spin that can't be quantified.

My solution would be to name a person or persons — paid for by IT but working for the CFO — to analyze all major systems one year after they are deployed. This person's or group's work would begin in the early stages of system design so they would know the basic specifications of the new system. The analysis would measure IT development costs, ongoing IT production costs, ongoing user staffing and production costs, and ongoing user savings. The product of that study would be a computation of the actual ROI achieved by each project and a determination of each project's effectiveness in the user department.

Such a study would provide many benefits. It would verify the actual ROI of the project and compare it to the pre-project estimates. That would help rein in those outrageous ROI claims that are sometimes used to gain project approval. The study would also compare the deliverables promised against those that are actually delivered. Most important, it would build a database of numbers showing the true value of the measured projects. That would make it easier for IT and the user departments to quantify the benefits of projects and thereby show the value of IT to the corporation.

We often talk on these pages about how IT needs to act more like a business. There is no better way to act like a business than to know and demonstrate how effectively IT helps the company to achieve its financial and business objectives.

Once CEOs begin to realize the value of IT, perhaps decisions about downsizing, outsourcing and offshoring will be made with a better understanding of the potential downside and the resultant impact on corporate advantage. That will only be possible if CIOs are able to quantitatively answer the question "What is the value of IT?" ■

Paul M. Ingevaldson *retired as CIO of Ace Hardware in 2004 after 40 years in the IT business. Contact him at ingepi@aol.com and visit his Web site at* www.paulingevaldson.com.

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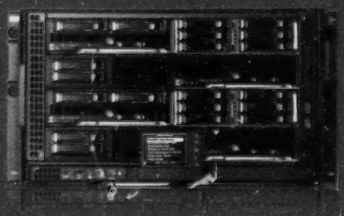

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